

PERRY

The History of the Lake
Shipping trade of Chicago

Economics

A. M.

1910

UNIVERSITY OF ILLINOIS
LIBRARY

Class

1910

Book

P429

Volume

Mr10-20M





Digitized by the Internet Archive
in 2013

<http://archive.org/details/historyoflakeshi00perr>

THE HISTORY OF THE LAKE SHIPPING TRADE OF CHICAGO

BY

LORINDA PERRY

A. B. University of Illinois, 1909

THESIS

Submitted in Partial Fulfillment of the Requirements for the

Degree of

MASTER OF ARTS

IN ECONOMICS

IN

THE GRADUATE SCHOOL

OF THE

UNIVERSITY OF ILLINOIS

1910 *ms*

1910
P429

1 - 4 Jan 11 1910

UNIVERSITY OF ILLINOIS
THE GRADUATE SCHOOL

JUNE, 1910

I HEREBY RECOMMEND THAT THE THESIS PREPARED UNDER MY SUPERVISION BY

LORINDA PERRY, A. B., University of Illinois, 1909

ENTITLED THE HISTORY OF THE LAKE SHIPPING

TRADE OF CHICAGO.

BE ACCEPTED AS FULFILLING THIS PART OF THE REQUIREMENTS FOR THE

DEGREE OF MASTER OF ARTS IN ECONOMICS.

Simon Lituan.

In Charge of Major Work

Maurice H. Robinson
acting

Head of Department

Recommendation concurred in:

Committee

on

Final Examination

169132

1910
r429

HISTORY OF THE LAKE SHIPPING
TRADE OF CHICAGO.

Introduction, chapter I. Early Commercial History of Chicago and Forces Making for its Development.

Chapter II. A Brief History of the Tonnage of the Great Lakes.

Chapter III. A Study of the Chief Commodities Composing the Lake Trade of Chicago.

Chapter IV. The Chicago Harbor.

Bibliography.

Chapter I.

Early Commercial History and Forces Making for
the Development of Chicago.

✓ The history of Chicago is the history of the rapid growth of a city in population and in commerce due to its position at the head of one branch of the greatest inland water route in the world. This position, however, would have been of little value to Chicago did it not have behind it, only waiting for some outlet, a hinterland containing rich natural resources of fertile farm lands and valuable mines of coal, iron, copper, and some lead. The hinterland of Chicago today, is of vast extent, stretching east to Michigan and Ohio, south, west and northwest to within a radius of from seven hundred fifty to one thousand miles. ✓ In 1906 within this area was produced most of the limestone and cement rock of the United States, about one-fourth of the American coal and a large part of the iron and copper output. The centre of wheat production, situated in Iowa, is about four hundred miles from Chicago, which levies its share of the eastbound surplus. Chicago receives the lion's share of the oats and hay of this area. About three-fourths of the corn raised in the United States is grown within the Chicago area, and Chicago is the chief market for it. Much of this corn is fed to hogs which are shipped to Chicago to be slaughtered, packed and distributed over the world.

✓ Yet Chicago did not always have such a rich tributary country behind it, for this country had to be settled, the prairie sod broken and planted in corn and wheat and oats. Houses had to be built, roads laid out and some means of transportation developed.

The mere situation of Chicago upon a water route at a point which was naturally the terminus of the Erie Canal - Great Lakes route to the seaboard could not cause Chicago to become a great lake port. Chicago could not import everything and export nothing - some time there would be a day of reckoning. It was the development of the resources of her hinterland that furnished Chicago with the wherewithal to pay for her imports.¹

The present site of Chicago was visited by the French in 1663. When the English obtained possession of the Mississippi Valley in 1763, the Chicago River furnished an excellent portage for the conveyance of furs from the Illinois country to the Great Lakes. In 1804, Fort Dearborn was built by the United States where the city of Chicago now stands. Only a small garrison was kept at the fort and the only white residents there were a Mr. Kinzie and his son, furtraders. During the War of 1812, the small garrison, in attempting to escape from the fort, was massacred by the Indians. In 1816, the fort was rebuilt, the furtraders returned and the fort served as a stopping place for western emigrants, and as a fur trading station for the Indians.²

While the Erie Canal was an important factor in the economic development of the West, by giving to the West a cheap transportation route to the seaboard, it did not, and could not, affect Chicago's commerce until after the projection of the Illinois Michigan Canal. The Illinois Michigan Canal enterprise was the one factor that gave the first impetus to the development of Chicago's

--o--

¹ Chi. Har. Com. 138-42.

² Sheahan & Upton, Chicago. 24.

commerce and to the growth of its population. Before the Illinois Michigan Canal became an assured project, and Chicago was definitely decided upon as the terminus of it, almost any other place near the head of Lake Michigan gave as much evidence of commercial development as Chicago.

Chicago was situated upon a small, sluggish, sand-clogged stream, which meandered through low damp prairie land - in rainy seasons little better than a bog. There were practically no roads leading from Chicago and the roads that did exist were almost impassable in rainy weather. The trade of Chicago was limited to a radius of not more than fifty miles, though live stock could be driven to Chicago from a greater distance. Later plank roads were built out from Chicago, raising to some extent this mud embargo.¹ Thus Chicago, blockaded by its mud, could not avail itself of the opportunities for trade afforded by the Erie Canal, because it had nothing to send East, although it was compelled to depend upon this Eastern route for its supplies.

Joliet was the first to suggest to the French government the idea of the Illinois Michigan Canal, in 1673, as a link in the route from Canada to Florida. In 1810, Peter B. Porter, a member of Congress from New York drew attention to the possibilities of such a canal. In 1814, President Madison in his inaugural address referred to the importance of such a canal, and in 1816, a treaty was concluded with the Pottawatomie Indians whereby they relinquished all claim to a strip of land twenty miles in width, from

--o--

¹ Andreas, Hist. of Chi. I, 577.

Ottawa to Chicago.¹ The project was taken up by Governor Bond in 1818 and by Governor Coles in 1822, with no results. In 1827 after considerable agitation Congress granted to the State of Illinois every alternate section of land in a belt of country extending for six miles on each side of the projected canal. In 1829, the legislature of Illinois passed an act organizing a canal board, and in the same year a surveyor arrived to mark out the town which contained, besides the garrison, eight families engaged in the fur trade.²

The first effect of the Illinois Michigan Canal project was noticeable in the increase of population at Chicago, and in the surrounding country. The southern part of the State had been settled first, the northern part remaining unsettled because of a belief in the unhealthiness of the climate and the lack of fertility of the soil - primarily, though, because of a lack of good water communication with the East. In 1829, Peoria was a small pioneer outpost on the extreme northern frontier of the settled part of Illinois, and the only other towns in northern Illinois were Chicago and Galena, the latter having been settled rather early because of its lead mines. Between 1830 and 1835 the increasing probabilities of the early construction of the canal caused a steadily growing demand for farms and town lots along the line of the canal. Shrewd business men perceived that Chicago would become an important point for the transfer of passengers and commerce between the Great Lakes, and the projected canal, and consequently there arose

--o--

¹ Andreas, Hist. of Chi. I, 155-6.

² The Rys. Hist. of Com. of Chi., '54. 20.

much speculation in Chicago property and in canal lands.

Although the bubble of speculation burst, it had served to attract to Chicago and the interior many earnest settlers and to cover the hinterland with farms the produce of which was to form the chief source of Chicago's commerce for the years to come. It was this development of the back country - inevitable, because of its immense natural resources - through the construction of the Illinois Michigan Canal that caused Chicago to increase so rapidly in the next few years in population and in trade.

During this early period the attention of the outer world was attracted to Chicago. The following quotation from Niles Weekly, May 1835, said that the public mind "is being directed with considerable interest toward the town of Chicago in Illinois as among the first commercial cities of the west. . . . Chicago contains at present between three and four thousand inhabitants. Three years since it was only a military station. The state is rapidly settling with emigrants of industry and character as well as means," and predicted a prosperous commercial future for Chicago because of her position at the terminus of the Illinois Michigan Canal. In the same issue it also said: "Many hundred bushels (of potatoes) have been bought for shipment and are destined for Chicago. So rapid has been the accumulation of people at that point and vicinity, that provisions for them are not to be had except by importation, and prices now, we are told, are such as to bear shipping from here - dear as we are paying for our dinners."

Not much was done about the canal till the legislature met in 1835, when a loan of a half million dollars was authorized and work was begun upon the canal in 1836. The lack of funds, due

to underestimation of the cost of the canal construction and the panic of 1837, caused the building of the canal to move forward very slowly. In 1843 the work was completely suspended after an outlay of over \$5,000,000. By the aid of eastern capital, however, the construction of the canal was again resumed and the canal was completed in 1848.

The people of Chicago realized that in order to take full advantage of its position upon the Great Lakes as an intermediate market between the East and the West, the transportation systems in the tributary country must be developed. At this time Chicago had two rivals for future commercial supremacy - St. Louis, very advantageously situated on the Mississippi River, and Galena, which also had hopes of becoming a trading center. Agitation for the construction of railroads began early. In 1831, the canal commissioners were authorized to determine upon the advisability of building a canal or a railroad between the Chicago and Desplaines Rivers, and decided upon the canal. In 1832 a bill for the survey of a road between Peru and Cairo to operate in connection with the Illinois Michigan Canal, was introduced into the Senate. The plan failed - the public did not yet realize the future value of railroads. In 1834, the Chicago and Vincennes Railroad was incorporated, but its construction was not begun till long afterward.¹

The Galena and Chicago Railroad was authorized in 1836, work was commenced upon it in 1838 and it was completed for sixteen miles out of Chicago in 1849, the year after the completion of the canal. Connections by railroad with the East were greatly desired

--o--

¹ Andreas, Hist. of Chi. I, 244 ff.

and in 1837 the Michigan Southern Railroad, in 1842 the Michigan Central Railroad were begun. Both reached Chicago in 1852 and the following year, Chicago was connected by railway with New York City.¹ By 1854, railroad construction had been pushed so rapidly from Chicago that there were ten trunk lines with three branch and extension lines, 1,626 miles in length, leading out of Chicago.² These roads were planned as supplementary to the canal, with no thought of their ever entering into competition with the canal for the chief part of the traffic. The first effect upon the canal of the opening of the railroads leading into and from Chicago was to draw away from the canal practically all its passenger business. This was accomplished in a few months, and a large part of the earnings of railroads before 1860 was derived from the passenger service.³

Hitherto, St. Louis had been the leading city of the West. With the opening of the canal Chicago drew away much of her traffic, as freight charges from the Illinois River to the East via Chicago were much cheaper than by way of St. Louis and New Orleans.⁴ When the Illinois Central Railroad was completed Chicago was firmly established as the leading port of the Mississippi Valley.

From 1837 to 1842 was a period of stagnation in the history of Chicago, due to the failure of ill advised internal improvement schemes. During this period, the population of Chicago did not increase very rapidly - rising from 4,179 in 1837 to 6,590 in 1842.

--o--

¹ Blanchard, Chi. 503-4. Andreas, Trade and Com. 58.

² Annual Rev. of Com. '55. 23.

³ Eighty Years' Progress. 22. Putnam, Econ. Hist. of Ill. Mich. Canal. 419. ⁴ Ibid. 425.

However, as the country began to recover from the panic, and as the construction of the Illinois Michigan Canal neared completion Chicago began to grow. In 1845, the population of Chicago numbered 12,088, in 1850, 28,269 - more than double that of 1845 - in 1855, 80,023 - almost trebling in the five years - in 1860, 109,263, and in 1866 reaching the 200,000 mark.¹

The growth of the population of Chicago was not any more rapid or remarkable than the growth of its commerce. In 1832, the whole commerce west of Detroit consisted almost exclusively of the carrying westward of provisions and goods for the Indian trade, and supplies for the troops stationed at various posts on the Lakes. Furs and other frontier produce was brought back.² In 1833, Congress made an appropriation of \$30,000 for the purpose of building a harbor at Chicago to accommodate this growing commerce.³ The improvement consisted in extending two piers into the Lake from the mouth of the river, and was completed, at least temporarily, in 1834, so that, after a freshet had washed away the sand, boats could enter the river. That this improvement was needed very much is shown by the fact that in 1832, when the first steamboat appeared at Chicago carrying troops and supplies for the Indian War then in progress, it was forced to anchor half a mile from shore because it could not cross the sandbar at the mouth of the river.

The filling in of the back country caused a demand for supplies, and a consequent increase in the number of arrivals at the port of

--o--

¹ Sheahan and Upton, Chi. 128.

² Barton - Letter on Trade of Great Lakes. 6-7.

³ Sheahan & Upton, Chi. 26. Hunt, Mer. Mag. XVIII, 164.

Chicago. In 1833, there were four arrivals of seven hundred tons tonnage; in 1834, one hundred seventy-six arrivals of 5,000 tons; in 1835, two hundred fifty arrivals of 22,500 tons; and in 1836, four hundred fifty-six arrivals of 60,000 tons.¹ By 1839, the increase of business to Chicago and ports west of Detroit had become so large that a regular line of eight boats varying in size from 350 to 650 tons was established between Buffalo and Chicago making the round trip every sixteen days. This increase in business was caused by emigrants "with their household furniture and farming implements, and others going west, and not from any freight from Lake Michigan; as the rapidly increasing population of that section of the country required provisions to be imported into rather than exported from it."²

Until 1836 provisions as well as large quantities of merchandise were imported into Chicago, and for many years the most of the produce raised in the new country was required to feed the constantly growing population. The great bulk of the imports consisted of merchandise. Large quantities of lumber were also imported into Chicago, especially after the opening of the Illinois Michigan Canal; it was used in the construction of buildings and railroads. In 1851 the imports of lumber into Chicago consisted of 125,056,437 feet of boards, 27,583,475 laths and 60,388,250 shingles.³ In 1851, the imports into Chicago largely exceeded the ex-

--o--

¹ Blanchard, Hist. 423.
Niles. LI, 274.

² Barton, Letter. 9.

³ Andrews, Rep. on Trade & Com. 222.

ports - the value of exports was \$5,395,471, of the imports, \$24,410,400.¹ This wide difference is due to the fact that the imports consisted very largely of the more expensive merchandise, the exports of comparatively cheap bulky raw materials. Then too, large quantities of merchandise were imported through Chicago for St. Louis.

The early export trade of Chicago consisted almost wholly of produce, brought into Chicago in wagons - chiefly flour, wool, tobacco, wheat, beef, and pork. After the development of the railroads beef and pork were shipped, for very obvious reasons, by rail. The first shipment from Chicago was made in 1836, consisting of produce to the value of \$1,000. It has been said that a small lot of beef was shipped in 1833, also a little pork, but these shipments must have been very small indeed.²

It was during the period of stagnation due to the panic of 1837 that Chicago began her shipping trade career in those products that were to make her the primary grain market of the world. In 1838, a trader shipped seventy-eight bushels of wheat. In 1839, 3,678 bushels were shipped and in 1840, 10,000 bushels. This grain was brought into this "quagmire of a town" from 20, 50, 100 even 150 miles around. "The streets used often to be utterly choked and impassable from the concourse of wagons which ground the roads into long vats of blacking."³ With the opening of the Illinois Michigan Canal, the town was fairly flooded with grain. The canal

--o--

¹ Andrews, Rep. on Trade & Com. 218.

² Brass, Hist. of Chi. 1.

³ Parton, Atl. Monthly. XIX, 329.

passed through a very fertile farm region which hitherto had had no outlet for its bulky products, and which was sadly in need of transportation facilities. How great were these needs is shown by the following quotation: "Many portions of the country are without even natural outlets by which to forward their products to the great leading or national routes of commerce. Their products are comparatively valueless, on account of the cost of transportation to market. The wheat and corn grown in the central portions of Kentucky, Illinois, and Missouri will not, on the spot, command one quarter their value in New York, or the other markets on the Atlantic coast."¹

At the close of this chapter is given a table of Chicago's total exports of flour and grain from 1838 until 1857. (In 1858 the Chicago Board of Trade Reports begin.) From a careful study of this table, one can realize how rapidly the grain traffic developed at Chicago, in spite of the cost of transportation. The year 1848 is noticeable because of the sudden increase in the amount of grain exported and because of the fact that in that year were made the first exports of corn and oats. While the latter part of these statistics includes exports by rail, no shipments were made by rail before 1849 - no railroads leading into Chicago - and it is no exaggeration to say that even after that year, until 1860, the vast majority of exports from Chicago were shipped by lake.

The increase of business between Chicago and Buffalo caused a decrease in rates. When business first went westward from Chicago to Lake Michigan, the price of cabin passage and food was \$30, and

--o--

¹ Andrews, Report on Trade and Com. 9.



freights were proportionally high. For several years before 1841, cabin and found from Buffalo to Chicago was \$20, steerage \$10, freight \$.75 per cwt. for light and \$.50 for heavy goods.¹ After 1841, cabin and found fell to \$12, steerage to \$6, light goods \$.35, and heavy goods \$.20 per cwt.²

By 1860, one may say, Chicago was well established as the commercial centre of the West, and not even the disastrous losses of the fire of 1871 served to retard Chicago's growth, and commerce. Within a year after the fire, business structures equal in extent to all that were destroyed by the fire were in an advanced stage of construction, and these buildings were much better than the old ones. A study of the commercial statistics of that year shows a very slight break in the traffic.³

One very serious drawback to the navigation of the Great Lakes during this early period was the presence of sandbars at the entrances to the various harbors of the lakes. As has been said, the first steamer that arrived at Chicago was forced to anchor a half mile from shore because of the sandbar at the mouth of the river. The United States government began work at two or three places but ^{works} these were very slowly completed and afforded but slight protection to business. Practically all the harbors of the Upper Lakes were unimproved and because of the dangers and exposure of Lake Michigan, the traffic of that lake was confined to the west shore. At the flats of the St. Clair River many vessels were compelled to lie fast

--o--

¹ Barton, Letter. 10.

² Ibid. 22.

³ Chi. B'd Trade Rep. '72. Intro. 79.

aground, shift their cargoes and passengers, and one steamer, unable to cross, was forced to turn back.¹ Agitation to remedy these evils was begun early, and although responding slowly, the government finally adopted the policy of aiding commerce by deepening and providing better channels.

--o--

Note. - Statistics for Chicago trade before 1858 are decidedly unsatisfactory - in fact, no attempt was made to keep any statistics. The Democratic Press of Chicago published annual reviews of the trade and commerce of Chicago during the '50's, but these statistics were not accurate, and were rendered even ^{less} more so by attempts to estimate traffic for which they were unable to obtain figures - as for instance, the cargoes of unreported vessels, and of wagons carrying produce. These statistics are, probably, the most accurate of any of the time, ^{and} could a complete file of them have been obtained, would have proved helpful.

Andrews, "Report on the Trade and Commerce of the Great Lakes" is very unsatisfactory especially for Chicago's conditions, because of what it did not report. This same criticism applies to government lake statistics. The first attempt to gather any sort of complete data was made for the "Tenth Census". Tunell's Report of 1897 is the first good report. For commodity statistics the Chicago Board of Trade Reports are the only ones available for a historical study. The "Monthly Summary of Commerce and Finance" is excellent for lake commerce but as its publication has been

--o--

¹ Barton, Letter. 27. Andrews, Rep. on T'de & Com. 6.

only recently begun, it is of little use in a historical study.

Shipments of Flour and Grain for Four Years.

The following table shows the aggregate annual shipments of flour and all kinds of grain since the settlement of Chicago - compiled from the most authentic sources.

Year.	Flour. bbls.	Wheat. bu.	Corn. bu.	Oats. bu.
1838		78		
1839		3,678		
1840		10,000		
1841		40,000		
1842		586,907		
1843		688,967		
1844	6,320	891,894		
1845	13,752	956,860		
1846	28,045	1,459,594		
1847	32,538	1,974,304	67,135	38,892
1848	45,200	2,160,000	550,460	65,280
1849	51,309	1,936,264	644,848	26,849
1850	100,871	883,644	262,013	158,084
1851	72,406	437,660	3,221,317	605,827
1852	61,196	635,996	2,757,011	2,030,317
1853	70,984	1,206,163	2,780,228	1,748,493
1854	111,627	2,306,925	6,837,890	3,239,987
1855	163,419	6,298,155	7,517,625	1,888,538
1856	216,389	8,324,420	11,129,668	1,014,737
1857	259,648	9,846,052	6,814,615	506,778

Chicago Board of Trade Report, 1871. 37.

Table of Leading Exports of Chicago.

Articles.	1847.	1848.	1849.	1850.	1851.
Wheat, bu.	1,974,304	2,160,000	1,936,264	788,451	427,820
Flour, bbls.	32,598	45,200	51,309	66,432	71,832
Corn, bu.	67,315	550,460	644,848	262,013	3,221,317
Oats, "	38,892	55,280	26,849	158,054	605,827
Beef, bbls.	26,504	19,733	48,436	40,870	53,885
Pork, "	22,416	34,467	17,940	16,598	19,990
Tallow, "	203,435	513,005	...	719,100	1,084,377
Lard, "	139,009	...	684,600	724,500	2,996,747
Bacon, "	47,248	...	850,709	909,910	1,524,600
Tobacco"	28,243	209,078	...	85,409	182,758
Wool, lbs.	411,088	500,000	520,242	913,862	1,086,944
Hides, no.	8,774	1,617

Andrews, Report on Trade and Commerce, 1851. 219.

Chapter II.

A Brief History of the Tonnage of the Great Lakes.

The keynote of the history of transportation upon the Great Lakes is ^{the attempt} to secure for each vessel the least possible delay at the ports in loading and in discharging cargo, and to obtain the greatest possible number of round trips per season. The lake season being a short one, averaging about seven months in the year, the question of dispatch in port and between ports becomes an important one. To this end, steam has gradually replaced sails as a motive power, ships have increased very greatly in size, the loading and unloading facilities at the various ports have been materially improved - even the method of fuelling by bringing the coal alongside the vessel in a barge or a scow and putting it on board while the vessel is being unloaded and loaded serves to gain time and to increase the number of round trips a vessel can make in a season.¹ Whereas fifteen or sixteen round trips a year were considered excellent time twenty-five years ago, now the average lake bulk carrier makes about thirty round trips.

During the last half century a gradual change in the construction of lake vessels has come about. There has been a substitution of steam for sails as a motive power, a change from wood to metal for building materials, and a great increase in the size of boats.

Sailing vessels predominated upon the Great Lakes during the early half of the last century. Barton estimated that in 1846 there were two hundred fifty sailing vessels on the Great Lakes

--o--

¹ Tunell, Statistics. 9.

varying in size from thirty to three hundred fifty tons.¹ In the same year Niles' Register estimated that there were forty-eight steam-boats on the Lakes, varying in size from fifty to three hundred fifty tons.² In 1851 the tonnage of the sailing vessels was about twice that of the steam vessels, being about 138,000 tons as against 74,000 tons of the latter.³

Reliable statistics for the early period of lake navigation are not available. The following table shows rather graphically the history of the substitution of steam for sail as a means of propulsion.

Steam.

Year.	Number of vessels.	Gross tonnage.	Average tonnage.
1870	625	136,980	219
1875	869	197,073	227
1880	912	209,465	230
1885	1,154	332,365	288
1890	1,507	648,725	430
1895	1,737	854,018	492
1900	1,719	1,106,842	644
1906	1,824	1,838,136	1,088

--O--

¹ Barton, Letters. 22.

² Niles'Reg. LXIX, 335.

³ Andrews, Rep. 49.

Sail. ✓

Year.	Number of vessels.	Gross tonnage.	Average tonnage.
1870	1,545	254,819	165
1875	1,645	335,822	204
1880	1,415	302,264	214
1885	1,282	314,383	242
1890	1,236	326,077	264
1895	1,066	298,297	280
1900	813	333,906	411
1906	511	268,583	526

Unrigged. ✓

Year.	Number of vessels.	Gross tonnage.	Average tonnage.
1870	2,384	237,287	100
1875	2,075	238,740	115
1880	202	45,766	127
1885	198	41,301	211
1890	174	29,301	168
1895	157	48,649	310
1900	233	82,109	352
1906	230	75,914	330

From this table it is seen that the tonnage of sailing vessels in 1870 was about double that of steam. Not until 1884 did the steam tonnage exceed the sail tonnage of the Great Lakes, and since that time the sail tonnage has remained about stationary. The latter has decreased even more than the statistics show, for it in-

--O--

cludes the tonnage of a class of vessels known as schooner barges, which are towed but are supplied with rigging so that if they should break away they would not be entirely helpless.¹ The majority of the sailing vessels on the Great Lakes ply Lake Michigan and are used chiefly for local traffic and for harbor work.²

The explanation of the very striking difference in the number of unrigged vessels on the lakes between 1875 and 1880 is found in the fact that before 1875 canal boats had to be documented and were included under unrigged vessels.³ In 1895, there is a noticeable increase in the average size of unrigged vessels due to the construction of large barges used as bulk carriers for distance traffic.⁴

There had been a constant increase in the size of both steam and sailing vessels on the Great Lakes. In 1870 the average size of steam vessels was 219 tons gross, of sailing ships 165 tons gross; in 1900 the average size of the former was 644 tons and of the latter 411 tons gross; while in 1906 the average size of steamers was 1,008 tons and of sailers 526 tons. Sailing vessels have not increased in size so much as steamers. These figures do not show the enormous tonnage of a few single boats. In 1906, there were on the Great Lakes, nine steamers of over 7,000 tons and three sailing vessels of over 5,000 tons.⁵ One of the largest boats on the Lakes

--o--

¹ Water Transportation, 1906. 123.

² Tunell, Statistics. 14.

³ Water Transportation, 1906. 124.

⁴ Rep. Com. Corp. I, 147.

⁵ Water Transportation, 1906. 126.

in 1907 was the "Thomas F. Cole", built for the fleet of the Pittsburgh Steamship Co. It is 605 feet 5 inches long, 58 feet beam, and 32 feet deep, having a tonnage of 7,268 tons and a capacity of 12,000 tons of ore.¹

Steamers have a decided advantage over sailing vessels in the Lake trade. Good steaming coal can be bought at low prices at the ports, and as the voyages are short, the vessels are not burdened with a large amount of dead freight in the form of coal. In the severe weather on the lakes sailing vessels are very difficult to manage while steam vessels usually can run against any wind. Then the desire for dispatch, so characteristic of all lines of modern business, with the object of securing as many round trips per season as possible leads to the selection of steam as a motive power.

The size of the Lake vessels increased very noticeably between the years 1885 and 1890. This was due to the construction of boats of iron and steel instead of wood. No great progress was made in the use of metals for the construction of boats on the Great Lakes until about 1885. After 1890 the number of metal boats increased very rapidly, and the construction of wooden boats began to decline. The following is a table of the number of wooden vessels and the number of metal vessels on the Great Lakes for a series of years.²

--O--

¹ Transportation by Water 1906. 126.

² Ibid. 124.

Metal.

Year.	Number of vessels.	Gross tonnage.	Average tonnage.
1875	16	15,585	974
1880	18	15,973	887
1885	34	34,028	1,001
1890	88	127,926	1,454
1895	190	300,648	1,582
1900	318	686,675	2,159
1906	543	1,525,506	2,811

Wooden.

Year.	Number of vessels.	Gross tonnage.	Average tonnage.
1875	4,573	756,050	165
1880	2,511	541,522	216
1885	2,600	650,596	250
1890	2,829	876,177	310
1895	2,770	900,316	325
1900	2,447	836,182	342
1906	2,022	656,129	324

From the table it is seen that while the number of metal ships on the Great Lakes in 1909 was hardly one-fourth of that of wooden ships, yet the tonnage of the former is over two times that of the latter. This shows the effect of the construction of metal ships upon the size of boats. Iron is at present being replaced by steel ^a as construction material.¹

--O--

¹ Rep. Com. Corp. I, 131.

The peculiar character of the traffic of the Great Lakes, which consists of a few commodities carried usually from one end of the Lakes to the other, had led, recently, to the construction of bulk cargo vessels - vessels carrying cargo lots of a single commodity. "They maintain no regular schedule, and, while they usually operate within a limited district over a small number of routes, their terminal ports are not always the same."¹ These bulk cargo vessels are the largest on the Lakes - indeed some of them are even larger than the average freight boat of the sea, and each year larger ones are being built. For a few years after 1888, about forty "whalebacks" were built for the Lake trade and bought up by the Pittsburg Steamship Co. for the iron traffic. These vessels, which did not carry more than 2,000 or 2,500 tons, were replaced by larger ones.²

The fact that a full cargo may be taken on board at one port has contributed very much to increasing the number of round trips a boat may make in a season.

The effect of the increasing size of lake vessels is seen from the table of arrivals and clearances at Chicago since 1862. The largest number of vessels arrived at and cleared from Chicago in 1882. It was during this half of the decade that iron was beginning to be used for construction, making possible^a a great increase in the size of boats. Since that year (1882), there has been a steady decrease in the number of clearances and arrivals, but a steady increase in the vessel tonnage. Since 1895, the vessel tonnage has

--o--

¹ Rep. Com. Corp. I, 131.

² Ibid. 132.

remained about stationary, owing to the condition of Chicago's shipping facilities.

The enormous increase in the size and value of boats has caused a change in the form of boat ownership. Before the beginning of the construction of steel ships and the consequent increase in the size of boats, vessels were usually owned and operated by individuals or by men associated in partnership. Recently the corporate form of ownership has become predominate.

The first statistics concerning the ownership of vessels in the United States are given in the Eleventh Census Report on Transportation (page 24.). This contains no special statistics for the Great Lakes. In 1889 the number of vessels owned by individuals in the United States was over six times that owned by joint stock companies and by corporations. The aggregate tonnage of the vessels owned by the former was more than that owned by the latter two, although the average size of the vessels of the former was much less than that of the other two. This is explained by the fact that most of the vessels owned by individuals were sailing vessels, while the majority owned by joint stock companies and by corporations were propelled by steam.

The Census Report on Water Transportation of 1906 gives statistics concerning the ownership of vessels in the United States, but this report, like the preceding one, gives no direct statistics for the Great Lakes. The following table taken from the Report of the Bureau of Corporations on Water Transportation (Part I, page 163), summarizes the question of the ownership of vessels on the Great Lakes in 1907.

	Owners or operators.	Motor and steam.		Sailing.	
		No.	Gross tons.	No.	Gross tons.
Packet lines	37	138	220,785		
Ore, coal, and grain carriers	97	317	1,083,914	4	10,248
Lumber and coal carriers	58	76	42,363	28	12,366
Towing	4	106	7,814	2	6,289
Miscellaneous	17	38	12,324	1	355
Total	213	675	1,287,200	35	23,598
Corporation	150	579	1,281,389	16	16,417
Partnership	30	50	40,718	10	3,913
Individual	33	46	45,093	9	3,268
Total	213	675	1,367,200	35	23,598

	Barges.		Total.	
	No.	Gross tons.	No.	Gross tons.
Packet lines			138	220,785
Ore, coal, and grain carriers	65	137,745	386	1,231,907
Lumber and coal carriers	39	20,610	143	95,339
Towing	2	1,749	110	10,192
Miscellaneous	23	8,601	60	21,289
Total	129	168,705	839	1,559,503
Corporation	95	142,885	690	1,440,691
Partnership	24	18,374	84	63,005
Individual	10	7,446	65	55,807
Total	129	168,705	839	1,559,503

The predominate form of owmenship of vessels on the Great Lakes in 1907 was the corporate form. Corporations owned over 92% of the total gross tonnage of the Lakes, and over 95% of the gross steam tonnage. The next form of ownership in order of importance is the partnership, and individual ownership of vessels is of least importance.¹

Among the corporations owning fleets of vessels are those engaged in production, and the boat company is a subsidiary concern of the larger one. The majority of the large bulk freighters engaged in the iron ore traffic on the Great Lakes is owned by the Pittsburg Steamship Co., a subsidiary concern of the United States Steel Corporation. In 1908 this company owned 101 vessels with a gross tonnage of 368,165 tons, or about 16% of the total gross tonnage of the Lakes. Other companies owning large fleets are the Gilchrist Transportation Co., which owns a fleet of 62 vessels of 190,890 tons gross, the Lackawana Steel Co., the Cambrian Steel Co., and the Tonawanda Iron and Steel Co.²

Besides the corporations engaged in some large industry, the railroads are interested in the boat lines of the Great Lakes, and especially in those lines engaged in the carrying of package freight. As package freight is usually intended for transportation beyond the water termini, this arrangement is of great advantage to the railroads. It tends, though, to stifle the competition between the lake and rail routes, and to overcome the advantages in freight rates obtained through this competition. A gradual rise in rates

--O--

¹ See also Mr. Keep's Testimony, Ind. Com. IV, 716.

² Thayer, Annals Amer. Acad., Jan. 1908. 126.

on package freight is noticeable since the railroads have gained control over the package lines.¹ The following is a list of package boat lines owned or controlled by railroads.

Boat Line.	Owned by
1. Erie & Western Transportation Company (Anchor Line)	Pennsylvania Railway.
2. Western Transit Company.	N. Y. C. & H. R. R. R.
3. Union Steamboat Line.	Erie R. R.
4. Lackawanna Transport Company.	Delaware Lackawanna & Western R. R.
5. Minneapolis, St. Paul & Buffalo Steamship Co. (Soo Line.)	Minneapolis, St. Paul & Sault Ste Marie R.R.
6. The Mutual Transit Company.	
7. The Rutland Transit Company.	N. Y. Central R. R.
8. The Canada Atlantic Transit Company.	Grand Trunk R. R.
9. The B. & O. Lake Line	B. & O. R. R.
10. The Great Northern Steamship Company.	Great Northern R. R.

The largest lines are the Western Transit Co. and the Anchor Line, the latter operating fourteen vessels between Lake Erie and Lake Michigan, and Lake Superior.²

The tendency in the ownership of vessels on the Great Lakes is toward the corporate ownership - either by railroads or by corporations engaged in production. It looks very much as if competition

--C--

² Johnson, Ocean and Inland Transportation. 353.

Thayer, Annals Amer. Acad., Jan. '08. 136.

¹ Thayer, Annals Amer. Acad., Jan. '08. 129.

in the future between carriers on the Great Lakes will be between those not engaged in production and those that are so engaged. Any attempt on the part of the carriers to charge unreasonable rates will result in the producers carrying their own material.

Chicago has never been a vessel owning port although in early times Chicago did own a rather large fleet. In 1855, the majority of the 4,521 vessels owned by the district of Chicago was owned in the city of Chicago.¹ The number of sailing vessels owned in Chicago declined since 1874, as well as the number of steamers since 1855, so that in 1908, of the 246 vessels owned in Chicago, 41 were tugs, 16 steam canal boats, 4 fire boats, 20 steam yachts, 27 gasoline launches, 11 sail boats - all used mostly for private purposes or for harbor work. Of the 88 steamers owned in Chicago in 1908, only one had a tonnage of over 4,000 tons, two of over 3,000 tons, two of over 2,000 tons, and eleven of over 1,000 tons.² This failure to own boats in Chicago is due to the method of taxing water craft in the State of Illinois, where vessels are taxed as personal property. Consequently, many transportation companies have moved their offices into Indiana, which lays a tax of three cents per ton figured on the net tonnage. This method of taxation gives a much lower tax than the method in vogue in Illinois.³

--o--

¹ Annual Rev. of Com. 1855. 19.

² See Chi. B'd Trade Rep. 1908.

³ Rep. Com. of Corp. I, 398.
Chi. Har. Com. 199 ff.

Arrivals and Clearances at the Port of Chicago.¹

Year.	Arrivals.		Clearances.	
	Number of vessels.	Vessel tonnage.	Number of vessels.	Vessel tonnage.
1862	7,147	1,931,692	7,270	1,915,554
1863	8,678	2,172,611	8,457	2,161,221
1864	8,938	2,172,866	8,824	2,166,904
1865	10,112	2,106,859	10,067	2,092,272
1866	11,084	2,258,572	11,115	2,361,520
1867	12,230	2,588,527	12,140	2,512,676
1868	13,174	2,984,591	13,225	3,020,812
1869	13,730	3,123,400	13,872	3,149,946
1870	12,739	3,049,265	12,433	2,983,942
1871	12,320	3,096,101	12,312	3,082,235
1872	12,824	3,059,752	12,531	3,017,790
1873	11,858	3,225,911	11,876	3,338,803
1874	10,827	3,195,633	10,720	3,134,078
1875	10,488	3,122,004	10,607	3,157,051
1876	9,621	3,089,072	9,628	3,078,264
1877	10,233	3,274,332	10,284	3,311,083
1878	10,490	3,608,534	10,494	3,631,139
1879	11,859	3,887,095	12,014	3,870,300
1880	13,218	4,616,969	13,302	4,537,382
1881	13,048	4,533,558	12,957	4,228,689
1882	13,351	4,849,950	13,626	4,904,999
1883	11,967	3,812,464	12,015	3,980,873
1884	11,354	3,756,973	11,472	3,751,723
1885	10,744	3,653,936	10,798	3,652,286
1886	11,157	3,926,318	11,215	3,950,762
1887	11,950	4,328,292	12,023	4,421,560
1888	10,989	4,393,768	11,106	4,496,898
1889	10,804	5,102,790	10,984	5,155,041
1890	10,507	5,138,253	10,547	5,150,665
1891	10,224	5,524,852	10,294	5,506,700
1892	10,556	5,936,626	10,567	5,968,337
1893	8,754	5,456,637	8,789	5,449,470
1894	8,259	5,181,260	8,329	5,211,160
1895	9,212	6,329,702	9,363	6,392,497
1896	8,663	6,481,152	8,773	6,591,203
1897	9,156	7,209,442	9,201	7,185,324
1898	9,428	7,557,215	9,562	7,686,448
1899	8,346	6,353,715	8,429	6,390,260
1900	8,714	7,044,995	8,839	7,141,105
1901	8,430	6,900,999	8,471	6,930,883
1902	8,083	7,179,053	8,164	7,229,342
1903	7,650	7,587,410	7,721	7,720,225
1904	6,631	6,430,088	6,671	6,514,934
1905	7,236	7,364,192	7,268	7,375,963
1906	7,017	7,969,621	7,055	7,665,709
1907	6,745	8,057,062	6,736	7,995,211
1908	5,787	7,241,845	5,805	7,290,745

¹ This includes Michigan City and Waukegan also.

Chicago Board of Trade Reports for 1908 and 1871; the former contains data for the period after 1869.

Chapter III.

The Chief Commodities of the Lake Trade of Chicago.

The lake trade of Chicago consists chiefly in the shipment of grain and flour and in the receipt of lumber, coal and iron. The grain trade has long been the chief trade of Chicago. Situated as Chicago is at the head of the cheapest transportation route between the East and the West, extending into the very heart of the grain producing area of the United States, it is no wonder that Chicago early attained to being the primary grain market of the world. It was in 1855 that the Democratic Press of Chicago announced, to the surprise and doubt of many, the fact that Chicago had become the greatest primary grain market in the world.¹ By 1860 the centre of grain production in the United States had been shifted from the Middle Atlantic States to the North Central States, and Chicago grew rapidly as a grain market. Now, however, the grain centre is gradually shifting north and west of the North Central States and Chicago's primacy, especially as regards wheat, is being endangered by two other lake ports, Duluth and Superior.

The lakes have been of inestimable value to Chicago in keeping down rail rates. In fact this restraint has been mutual, the railroads serving to lower lake rates and to give lake carriers incentives to improving their shipping facilities to keep pace with similar improvements in rail facilities. As a result of this mutual restraint the cheapest rail rates for grain in the world are the rates upon grain shipped from Chicago to New York.

--o--

¹ Annual Rev. of Com. 1855. 11 ff.

Economy is the incentive for shipping grain by lake in preference to shipping it by rail. So long as lake rates are sufficiently lower than rail rates to overbalance certain disadvantages of lake transportation commodities will move by lake. When lake rates rise above this line of economy, so that the cheapness will no longer make up for the disadvantages of lake carriage, then traffic will move by rail.

The railroad has many advantages over the lakes in the transportation of grain. They are responsible for the safe delivery of goods - a responsibility the lake carriers refuse to assume. As a consequence lake cargoes have to be insured. The rate of insurance varies with the dangers of the voyage and is often the decisive factor in the choice between the lake and rail carrier. In seasons when grain is likely to heat, it arrives at its destination in better condition when shipped by rail than when shipped by lake. Then, too, rail carriers are more expeditious, their terminal facilities are usually much better, and occasionally considerable sums can be saved in cartage. The cartage expense is greater for corn and oats than for wheat, which is usually delivered directly to the millers who have their own terminal facilities. If grain is not shipped by lake on a through bill of lading the transshipment charges fall upon the shipper, and if carried by "wild" vessels that do not make connections with the railroads at the ports, elevator charges are also to be paid by the shipper. These terminal charges have undoubtedly been one cause of the diversion of grain traffic to the railroads.¹

--o--

¹ Tunell, Statistics. 32 ff.

Until about 1856, most of the traffic, especially the long distance traffic, to and from Chicago was borne upon the lakes.¹ Originally, railroads were not constructed with any expectation of competing with water routes, but rather to act as feeders for the latter. The early business of the railroads consisted mainly of the passenger traffic and of more expensive merchandise, the bulky cheap articles being left to the water routes.

Between 1860 and 1880, because of more effective organization and the use of improved facilities for handling freight at the terminals, because of the improvements of the permanent right of way - the introduction of steel rails, of improved rolling stock, etc. - and especially through the development of through traffic, the railroads found it possible to lower freight rates and to compete with the water routes. In the meantime, similar improvements had been made upon the lakes, by the deepening of lake channels and by^{the} improvement of boats and shipping facilities, so that lake freights fell also.²

It was not until the early 70's that the railroads entered very seriously into competition with the Lakes for the grain traffic, although they had cut rather deeply into the lake trade in the 60's. In the 70's, the railroads competed strongly both among themselves and with the Lakes for this traffic, and the reckless cut-throat competition between the railroads in 1876 reduced rates so low as to make the grain traffic profitable only for the larg-

--o--

¹ Transportation Routes to Seaboard. I, 24.

² Tunell, Statistics. 16.

est vessels.¹

It became evident early to the railroads that if they wished to enter upon the grain traffic they would have to compete with the water routes in the matter of terminal facilities. The first road to establish adequate terminal facilities in Chicago was the Baltimore and Ohio in the early 70's and the other roads soon followed this example.²

In the early period of the competition between the lakes and the railroads, rail rates were much higher during the season of closed navigation than during the open season. In 1873 the approach of the navigation season caused a reduction of six cents per bushel on all rail rates on grain from Chicago to New York to increase the movement of grain by rail.³ Now, however, the railroads do not make such a big difference between their rates during the two seasons.

From 1870 to 1900, on the whole, there has been a substantial and very widespread reduction of freight rates. The following is a table giving the average yearly rates on wheat and corn from Chicago to New York by the three routes - all rail, lake and rail, and lake and canal. Such a table of averages does not give a very adequate idea of transportation cost. Lake rates fluctuate very greatly while the published railroad tariffs do not. Such a table as the following is of value chiefly in showing the gradual decrease in rates. To give a really fair idea of the rates, it is

--o--

¹ Chi. B'd Trade Rep. 1876. Intro. 16. Rep. Ind. Com. 19.

² Transportation Routes to Seaboard. Part II, 26.

³ Ibid. / 56.

necessary to weight these averages, but as statistics are not available for this, one must be satisfied with the average.

Since the grain destined for the East reaches Chicago by rail, it is usually necessary that the grain go into storage, and large warehouses are necessary. The first elevator in Chicago was built in 1839, and the second lake shipment of wheat was shipped from it. The wheat was hoisted by hand into the upper story by old-fashioned pulley-blocks and ropes. The grain was unloaded through a spout into boxes of four bushel capacity. From the bins in the upper story a row of men was formed and the wheat was passed along in buckets. Later, horse power was substituted for raising and transferring the grain, and a bucketbelt was used to elevate it to the upper story. Steam was substituted for horse power in 1848, but did not supersede it till much later.¹ Today boats are filled very rapidly by means of a mechanical device called a "leg".

Until 1855 the total storage room of Chicago did not exceed 750,000 bushels. In 1871 there were seventeen large elevators on the river having a total capacity of 11,580,000 bushels.² A large percent of the storage room was destroyed by the fire of 1871. This caused considerable embarrassment to the grain trade of that and the following years.³ In 1891 Chicago had twenty-six elevators of 28,275,000 bushels.⁴ The following table shows the increase

--o--

¹ Andreas, Hist. of Chi. I, 579 ff.

² Sheahan & Upton, Chi. 44.

³ Chi. B'd Trade Rep. 1872. 15.

⁴ Int. Com. Part II, 1891. 50.

of the storage capacity of Chicago. 1850, 700,000 bushels; 1860, 5,500,000 bushels; 1870, 11,500,000 bushels; 1890, 28,675,000 bushels (Obtained from Int. Com. 1880 and 1891.); 1900, 28,400,000 bushels; 1908, 53,245,000 bushels (Chi. B'd Trade Rep. Last figure includes unofficial warehouse capacity.) Today, most of the elevators are found on the Calumet River. This is unfortunate as the grain is brought into Chicago and not into South Chicago. The reason given for the failure to locate elevators on the Chicago River is, that the condition of the Chicago River interferes too greatly with navigation.¹ Through rates are cheaper from local country elevators to New York than the local rates to Chicago plus the rate from Chicago to New York. This fact tends to cause grain to be shipped directly from the country elevators to New York; in fact, grain grown in the territory but a short distance from Chicago will not go east by way of the lakes because of the high rates for the short haul to the lake ports.²

--O--

¹ Chi. Har. Com. 367.

² Ind. Com. XIX, 176.
Tunell, Statistics. 48.

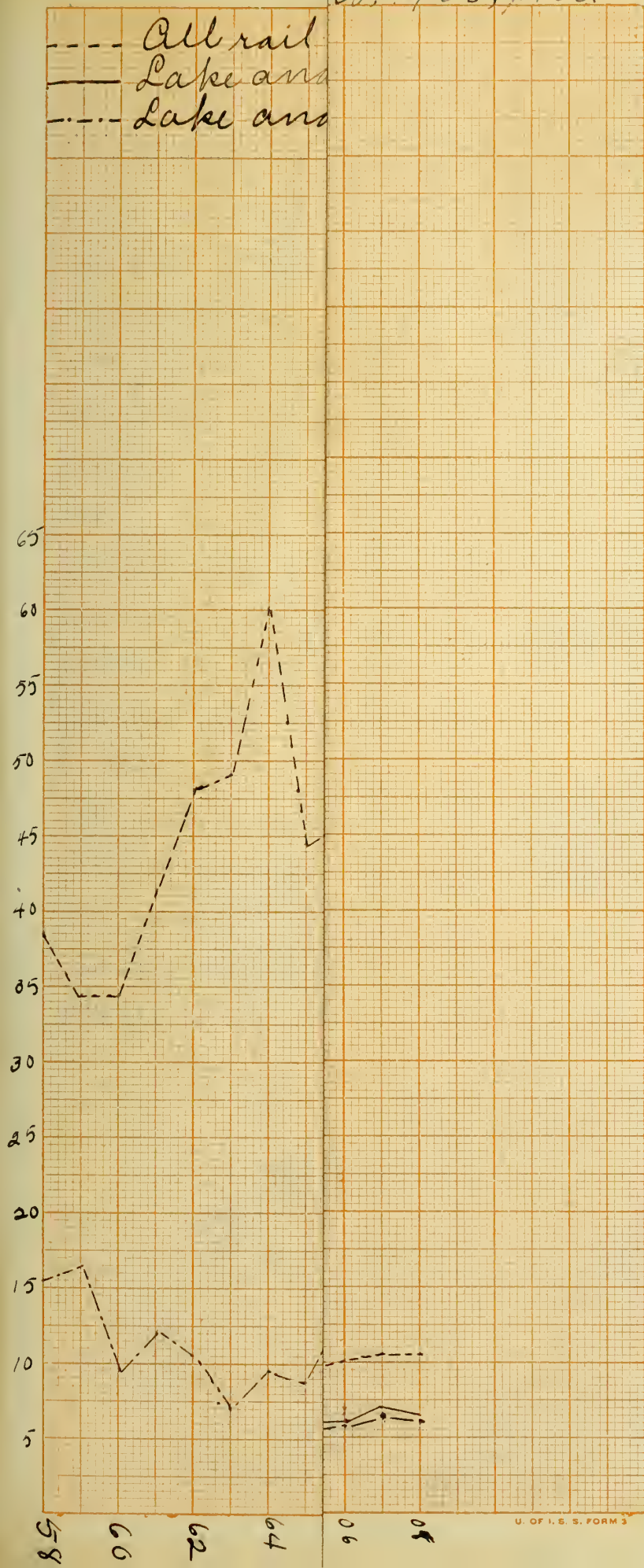
Average Freight Charges per Bushel from Chicago to New York.

Year.	Corn.			Wheat.		
	By lake and canal.	By lake and rail.	By all rail.	By lake and canal.	By lake and rail.	By all rail.
1858	.1270		.3619	.1550		.3861
1859	.1570		.3248	.1663		.3480
1860	.0833		.3248	.0950		.3480
1861	.1062		.3881	.1210		.4158
1862	.0957		.4480	.1062		.4800
1863	.0630		.4592	.0720		.4920
1864	.0900		.5600	.0952		.6000
1865	.0864		.4188	.0894		.4488
1866	.1075		.4312	.1377		.4620
1867	.0511		.4176	.0800		.4475
1868	.0604		.3532	.0802		.3784
1869	.0584	.2355	.3320	.0651	.2520	.3557
1870	.0600	.2220	.2800	.0677	.2250	.3000
1871	.0754	.2372	.2968	.0687	.2542	.3180
1872	.1072	.2660	.3266	.1110	.2950	.3499
1873	.0816	.2298	.2893	.0917	.2461	.3102
1874	.0382	.1388	.2456	.0400	.1709	.2625
1875	.0340	.1303	.2240	.0378	.1389	.2400
1876	.0875	.1079	.1574	.0982	.1136	.1686
1877	.0959	.1406	.1890	.1109	.1546	.2050
1878	.0883	.1053	.1652	.0996	.1209	.1770
1879	.1049	.1220	.1456	.1187	.1313	.1774
1880	.1341	.1443	.1748	.1313	.1580	.1980
1881	.0777	.0942	.1340	.0867	.1049	.1440
1882	.0672	.1028	.1350	.0723	.1091	.1447
1883	.0803	.1100	.1512	.0901	.1163	.1620
1884	.0655	.0850	.1232	.0700	.1000	.1320
1885	.0630	.0801	.1232	.0654	.0902	.1320
1886	.0845	.1120	.1400	.0910	.1200	.1500
1887	.0850	.1120	.1470	.0950	.1200	.1575
1888	.0671	.1026	.1354	.0705	.1114	.1450
1889	.0632	.0819	.1260	.0692	.0897	.1500
1890	.0593	.0732	.1136	.0676	.0852	.1430
1891	.0632	.0753	.1400	.0695	.0857	.1500
1892	.0595	.0721	.1296	.0645	.0759	.1380
1893	.0718	.0797	.1365	.0766	.0848	.1463
1894	.0493	.0650	.1232	.0511	.0700	.1320
1895	.0450	.0640	.1029	.0486	.0696	.1189
1896	.0575	.0615	.1050	.0619	.0661	.1200
1897	.0453	.0692	.1143	.0522	.0742	.1250
1898	.0381	.0441	.0980	.0445	.0491	.1200
1899	.0508	.0583	.1008	.0581	.0663	.1160
1900	.0407	.0472	.0919	.0449	.0510	.0996
1901	.0461	.0516	.0921	.0511	.0554	.0988
1902	.0483	.0551	.0994	.0526	.0589	.1062
1903	.0485	.0578	.1054	.0540	.0637	.1129
1904	.0363	.0482	.1038	.0473	.0550	.1112
1905	.0476	.0519	.0940	.0553	.0640	.0990
1906	.0551	.0572	.0952	.0603	.0635	.1020
1907	.0612	.0620	.1017	.0665	.0709	.1090
1908	.0562	.0579	.0989	.0605	.0660	.1060

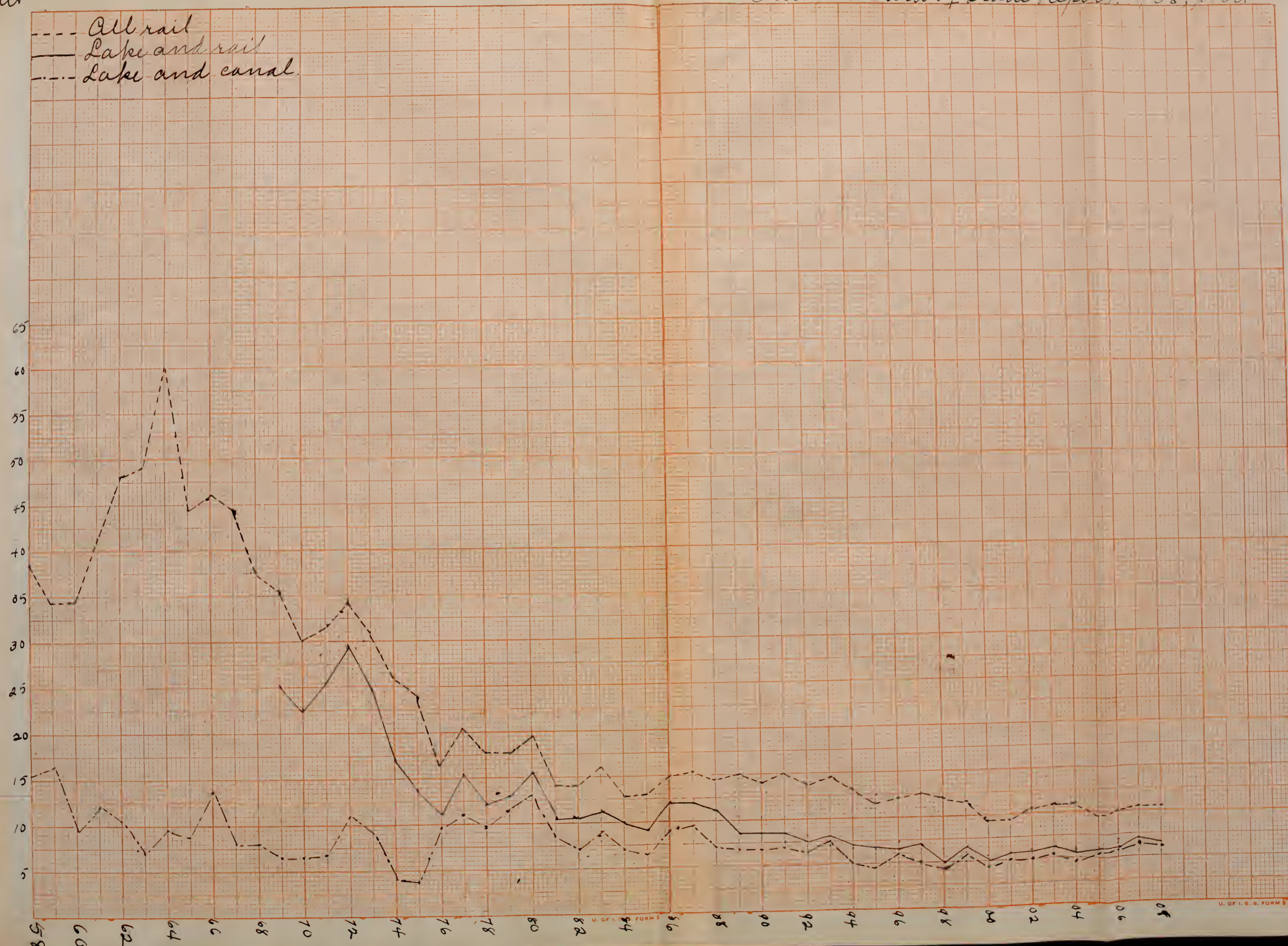
Obtained from Chicago Board of Trade Reports.

ents

averaging to New York
rd. 908, p108.



cents. Average freight charges per bushel on the transportation of wheat from Chicago to New York
 Sugar Board of Trade Report, 1858, 1908.



Wheat.

The first shipment of wheat, consisting of seventy-eight bushels, was forwarded from Chicago in 1838. After that year, lake shipments of wheat increased very much although there ~~was~~ a slight decrease between the years 1848 and 1854, due to a partial failure of the crops. That the railroads did not carry much wheat is shown by the fact that in 1858, of the 8,850,257 bushels shipped from Chicago, 8,726,110 bushels went by lake (See table at end of chapter.). In the 70's the railroad entered the field for the grain traffic and in 1881 and ^{again} in 1885 secured more wheat than the lakes. The lakes more than held their own until 1899, when the contest between the two routes was a very close one. In 1905, in 1906, and again in 1908, the shipments from Chicago by rail exceeded those by lake. Since 1902 there has been a decided decline in wheat receipts at Chicago due to the fact that the centre of wheat production is moving beyond Chicago's range, and wheat is being shipped to the ports of Duluth and Superior. In 1909 over 87% of the lake shipments of wheat proceeded from these two points.¹ Buffalo is the chief receiving port of lake grain.

Flour.

Flour was the first bulky commodity to be carried to any great extent by rail. The railroads began to make serious inroads in the flour traffic in the early 60's and by 1888 had obtained the bulk of the traffic. Since that time they have carried the greater part of the flour. In the 80's, the flour traffic was diverted some-

---o---

¹ Monthly Summary, Dec. '09. 1093.

what from Chicago to the Upper Lake ports by the development of the milling industry at Minneapolis.¹ The railroads have a big advantage over the lake carriers in the shipment of flour because (1) lake shipments involve transshipment to places not accessible to lake craft; (2) the time element is of more importance with flour than with grain; (3) flour cannot be stored nor held until the opening of the navigation season; (4) the cost of marine insurance operates to divert the flour traffic to the railroads.²

Oats.

Comparatively little oats were shipped from Chicago, during the early period of its existence. In the early 60's the shipments of oats from Chicago increased very much, and a large proportion went by rail because of the demand of our armies stationed in the South.³ After the war rail shipments declined somewhat in proportion to lake shipments. In 1873, rail shipments for the first time greatly exceeded those by lake, and they have continued to lead. In 1887 the lakes again entered into competition, but the rail route has always led. In 1908, lake shipments were scarcely one-eleventh of the rail shipments. There are two reasons why the rail route is preferable to the lake route for oats: (1) oats absorb moisture and become musty; (2) lake rates are fixed by weight rather than proportionately by bulk, therefore lake rates are higher on oats than on wheat or corn. The recent gain in the oats traffic by the lakes is due to

--o--

¹ Ind. Com. XIX, 35.

² Tunell, Statistics. 34.

³ Ibid. 37.

the increased size of boats which, if fully laden, are constructed to draw more water than the connecting channels afford. Many boats complete their cargo with the light-weight, bulky oats, instead of the heavier grains.

Corn.

The first shipment of corn from Chicago was made in 1847. For over fifteen years afterward only a small proportion of the corn found its way to market. Until the 60's, hundreds of thousands of acres were not even gathered, and the cattle were turned loose in the fields.¹ The reason for this is found in the high transportation charges. Although when sold in the East the grain brought \$.60 per bushel, it netted the farmer only \$.09 - the difference being eaten up in transportation charges and commissions. Many farmers found it cheaper to burn their corn for fuel than to sell it.² For years the Illinois Michigan Canal brought much of the corn into Chicago in the early days.

In the year 1876 because of an excellent crop considerable corn moved by rail. In 1884 rail shipments almost equalled the lake shipments and in 1885 they exceeded it slightly. Lake shipments increased until in 1897 they amounted to over twelve times the rail shipments. The total shipments of corn have declined since 1898 for several reasons. The consumption of corn in stock feeding and in the manufacture of corn products and distilled liquors at

--o--

¹ R. R.'s Hist. of Com. of Chi. 1854. 58.

² Spec. Stat. for Canal Con. 1865. 14.

or near the place of production has increased very much.¹ The fact that the through rates east from the local markets are cheaper than the sum of the local rates to Chicago and the rates east from there undoubtedly has served to decrease the receipts of corn at Chicago intended for eastern shipment.

The concern manifested over the diversion of grain to southern ports seems to be out of all proportion to the cause. There has been an increase in shipments from southern ports due to the opening up of new areas in Oklahoma, but of late years, exports of grain from New Orleans and from Galveston are decreasing. It will be years before these ports will be able to draw grain from Chicago's tributary country.²

--o--

¹ Water Transportation 1906. 131.

² Chi. Har. Com. 222.

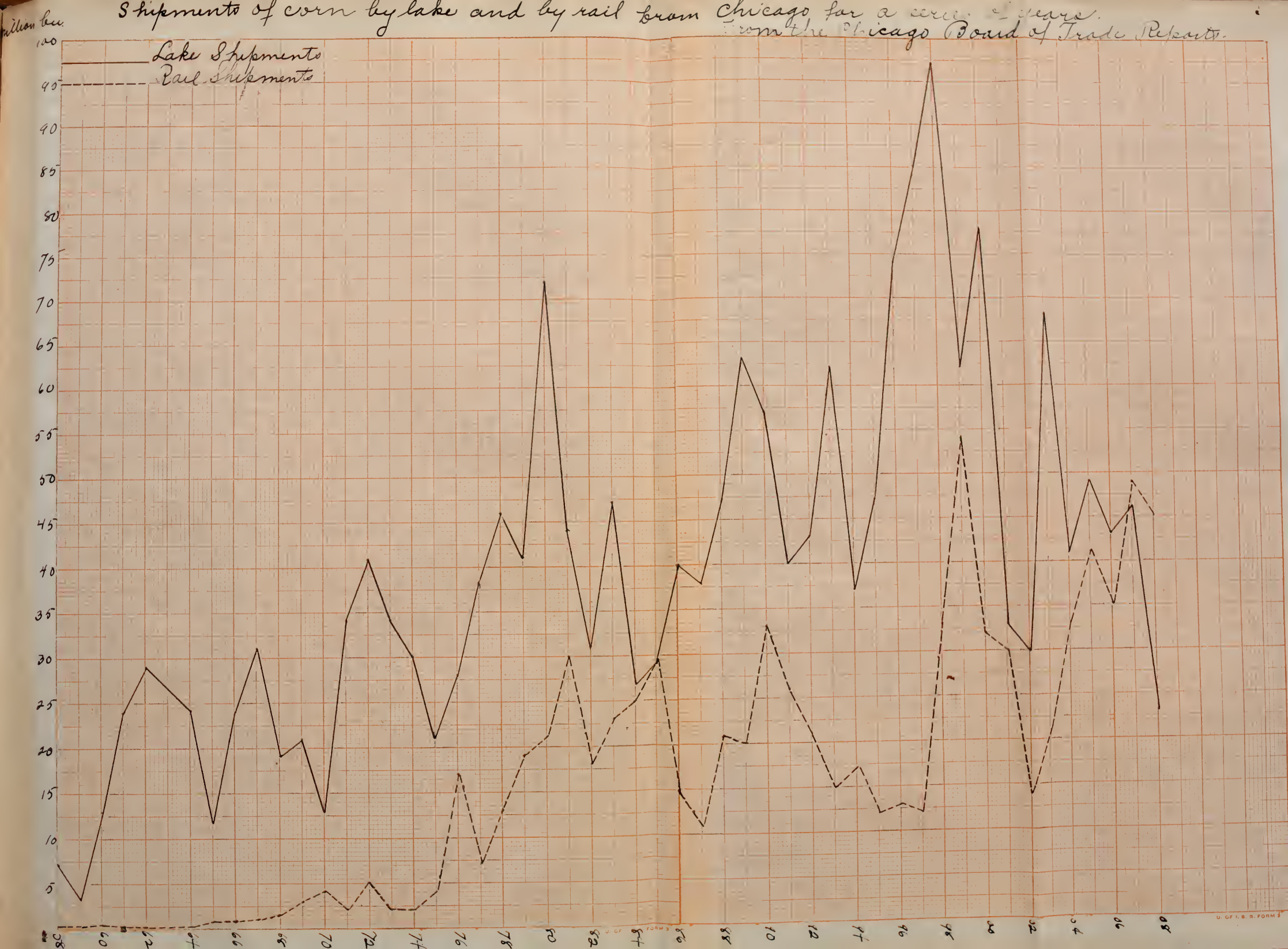
SHIPMENTS.

Flour. (Barrels)⁴¹

Wheat. (Bushels)

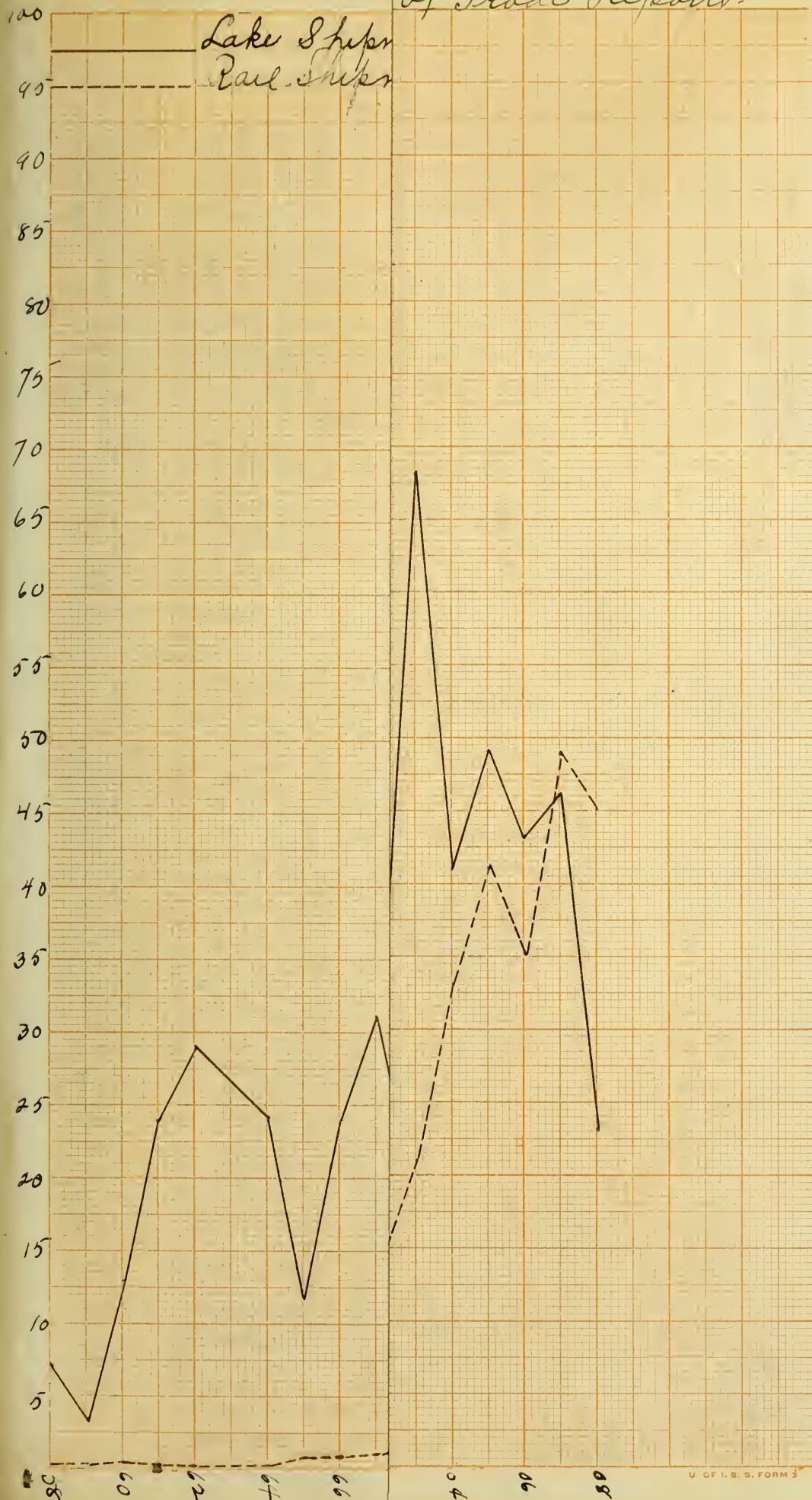
Year.	Lake.	Rail.	Lake.	Rail.
Year ending Dec. 31 -				
1858	377,177	93,178	8,726,110	133,423
1859	365,309	321,042	6,764,695	366,915
1860	218,741	408,082	11,817,476	377,647
1861	542,927	1,001,618	15,005,735	730,873
1862	1,057,803	672,961	13,466,325	175,322
Year ending Mar. 31 -				
1864	1,207,343	270,855	10,646,052	39,768
1865	1,034,793	208,747	9,983,567	114,075
1866	646,356	721,068	6,502,575	1,147,510
1867	481,491	1,585,776	5,827,846	3,605,618
1868	650,367	1,187,582	8,492,187	1,072,078
1869	774,556	1,749,973	8,896,647	2,114,300
Year ending Dec. 31 -				
1870	574,393	1,129,074	13,429,069	2,902,950
1871	488,705	797,085	12,120,923	686,576
1872	223,457	137,670	8,831,870	797,085
1873	428,321	1,874,157	15,528,984	8,680,965
1874	555,152	1,750,152	16,974,149	10,479,447
1875	328,283	1,956,127	16,061,054	6,899,433
1876	236,591	2,396,745	7,396,369	6,281,950
1877	148,779	2,333,524	10,345,983	3,943,810
1878	321,648	2,456,656	12,903,481	10,807,344
1879	330,257	2,757,738	17,622,796	12,812,982
1880	527,873	2,334,081	16,685,046	5,632,769
1881	159,415	4,338,890	7,688,072	9,167,751
1882	792,764	3,049,490	14,944,258	4,263,243
1883	801,099	3,197,687	7,067,057	4,046,554
1884	753,357	4,055,347	11,518,884	8,617,571
1885	652,373	4,587,826	5,436,461	7,806,175
1886	1,391,235	2,386,675	10,513,126	4,475,774
1887	1,544,196	4,835,471	17,313,351	8,724,268
1888	1,711,370	3,780,730	5,895,379	5,612,880
1889	1,811,467	2,102,487	10,330,675	5,474,142
1890	1,757,745	2,371,213	6,965,834	4,540,843
1891	1,640,738	2,405,327	31,102,888	7,887,281
1892	2,455,206	3,254,950	33,498,547	9,926,930
1893	1,471,060	2,633,856	19,720,775	4,717,483
1894	1,630,343	2,083,662	15,016,804	2,509,442
1895	791,620	1,740,380	13,258,440	9,081,920
1896	1,006,951	1,847,881	13,232,818	12,183,084
1897	1,060,734	1,675,127	18,449,628	7,837,338
1898	713,633	4,318,605	26,594,263	10,882,449
1899	800,906	4,620,557	5,185,423	4,905,065
1900	1,121,748	6,274,949	26,577,243	9,829,149
1901	918,763	7,020,386	31,523,724	13,998,227
1902	1,086,836	4,752,605	22,028,580	8,190,227
1903	1,265,483	5,569,388	16,443,522	7,505,221
1904	703,361	6,562,481	5,627,386	11,947,020
1905	2,399,502	4,962,365	5,069,982	8,635,346
1906	2,609,046	5,590,582	9,139,655	7,488,410
1907	3,270,651	5,961,042	14,368,973	9,945,919
1908			10,405,787	12,173,257

Shipments of corn by lake and by rail from Chicago for a series of years.
From the Chicago Board of Trade Reports.



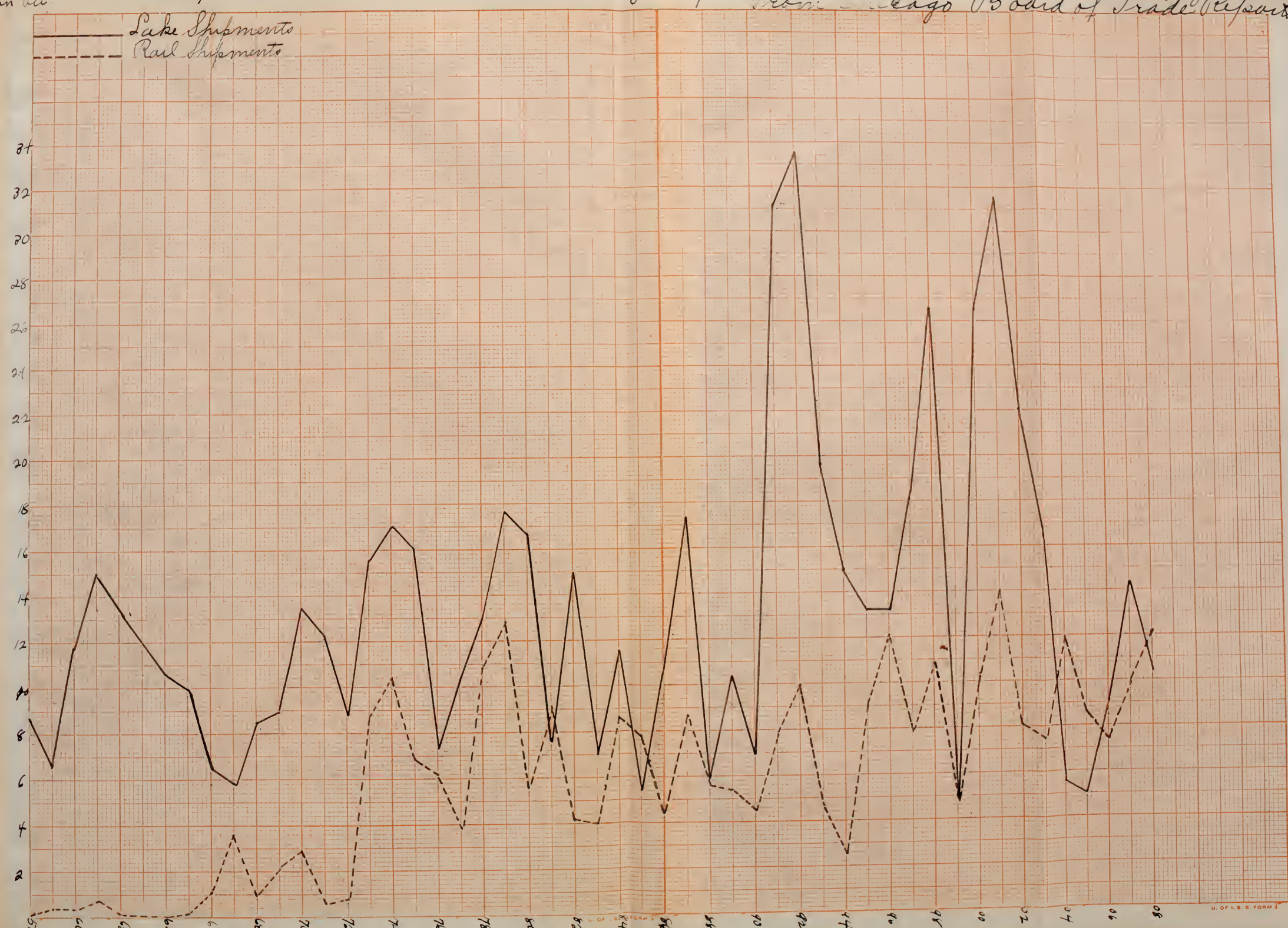
on bu.

Shipments of years. of Trade Reports.



Shipments of Wheat from Chicago by lake and by rail for a series of years
 From Chicago Board of Trade Reports

million bu.



Corn. (Bu.) Shipments.

Oats. (Bu.)

Year.	42			
	Lake.	Rail.	Lake.	Rail.
Year ending Dec. 31 -				
1858	7,545,075	135,900	1,315,226	30,506
1859	3,967,852	381,385	989,586	188,277
1860	13,063,043	577,611	605,304	242,580
1861	23,987,240	352,044	1,422,776	69,731
1862	29,248,677	125,162	2,470,745	357,451
Year ending Mar. 31 -				
1864	24,749,400	120,694	5,696,800	3,987,540
1865	11,998,475	616,077	12,098,000	2,922,792
1866	24,421,600	674,053	8,719,900	1,581,634
1867	31,457,855	1,453,162	7,395,113	2,069,980
1868	19,940,172	1,612,851	9,745,205	546,103
1869	21,671,071	3,367,718	12,755,929	2,971,124
Year ending Dec. 31 -				
1870	13,598,387	4,098,942	6,339,220	2,143,016
1871	34,200,876	2,515,154	8,797,599	3,353,648
1872	41,589,508	5,424,044	6,370,784	5,877,689
1873	34,487,205	2,255,111	5,985,954	9,708,179
1874	30,242,311	2,456,913	4,741,088	5,820,585
1875	21,850,652	4,571,144	4,579,248	5,698,686
1876	28,104,265	17,504,774	2,997,335	8,245,547
1877	38,607,611	7,754,290	5,013,278	7,477,057
1878	46,368,653	13,573,082	6,255,003	10,199,270
1879	41,561,336	19,733,191	1,589,939	11,924,081
1880	72,400,769	21,192,165	2,139,473	18,509,954
1881	44,164,571	30,879,909	4,807,581	18,325,591
1882	31,394,261	18,679,348	3,633,638	10,024,601
1883	47,738,117	23,841,715	4,938,546	26,907,477
1884	27,360,924	25,902,320	5,444,889	28,741,680
1885	29,382,591	29,422,976	1,571,481	30,854,981
1886	40,956,177	15,297,762	3,219,833	29,139,375
1887	38,710,856	11,734,628	10,215,112	27,585,355
1888	47,759,708	21,686,017	13,764,336	27,132,635
1889	63,200,754	20,655,269	24,948,459	25,523,227
1890	57,255,466	33,300,643	18,832,884	52,209,461
1891	40,069,786	26,508,514	17,832,975	50,938,639
1892	43,920,570	22,083,019	19,127,515	48,204,807
1893	62,967,955	15,942,824	22,563,294	44,553,825
1894	37,148,717	17,373,565	13,913,761	36,456,128
1895	47,857,550	12,075,715	17,674,409	49,165,251
1896	74,379,206	13,258,615	23,798,409	58,315,443
1897	85,250,760	12,171,496	50,192,982	54,473,974
1898	97,166,944	33,217,737	28,019,617	77,031,219
1899	62,399,727	54,142,369	16,382,635	69,098,403
1900	78,968,109	32,131,544	24,382,635	53,172,060
1901	33,833,732	30,268,141	15,178,727	61,133,239
1902	30,610,064	14,947,935	10,200,846	47,736,956
1903	68,093,622	21,085,493	17,071,172	46,460,507
1904	41,798,051	33,386,707	7,641,077	39,658,059
1905	49,772,146	41,381,196	11,938,925	54,188,935
1906	43,637,502	35,337,184	6,986,825	66,601,625
1907	46,604,412	49,166,367	4,505,204	64,392,109
1908	23,714,875	45,977,874	4,415,425	88,684,422

Compiled from Chicago Board of Trade Reports.

ian bu. This a series of years
 of Trade Reports.

Lake S
 Rail S

34
 32
 20
 28
 20
 24
 22
 20
 18
 16
 14
 12
 10
 8
 6
 4
 2

58

60

62

64

04

96

98

U. OF I. S. E. FORM 3

1-

and

5

10

it

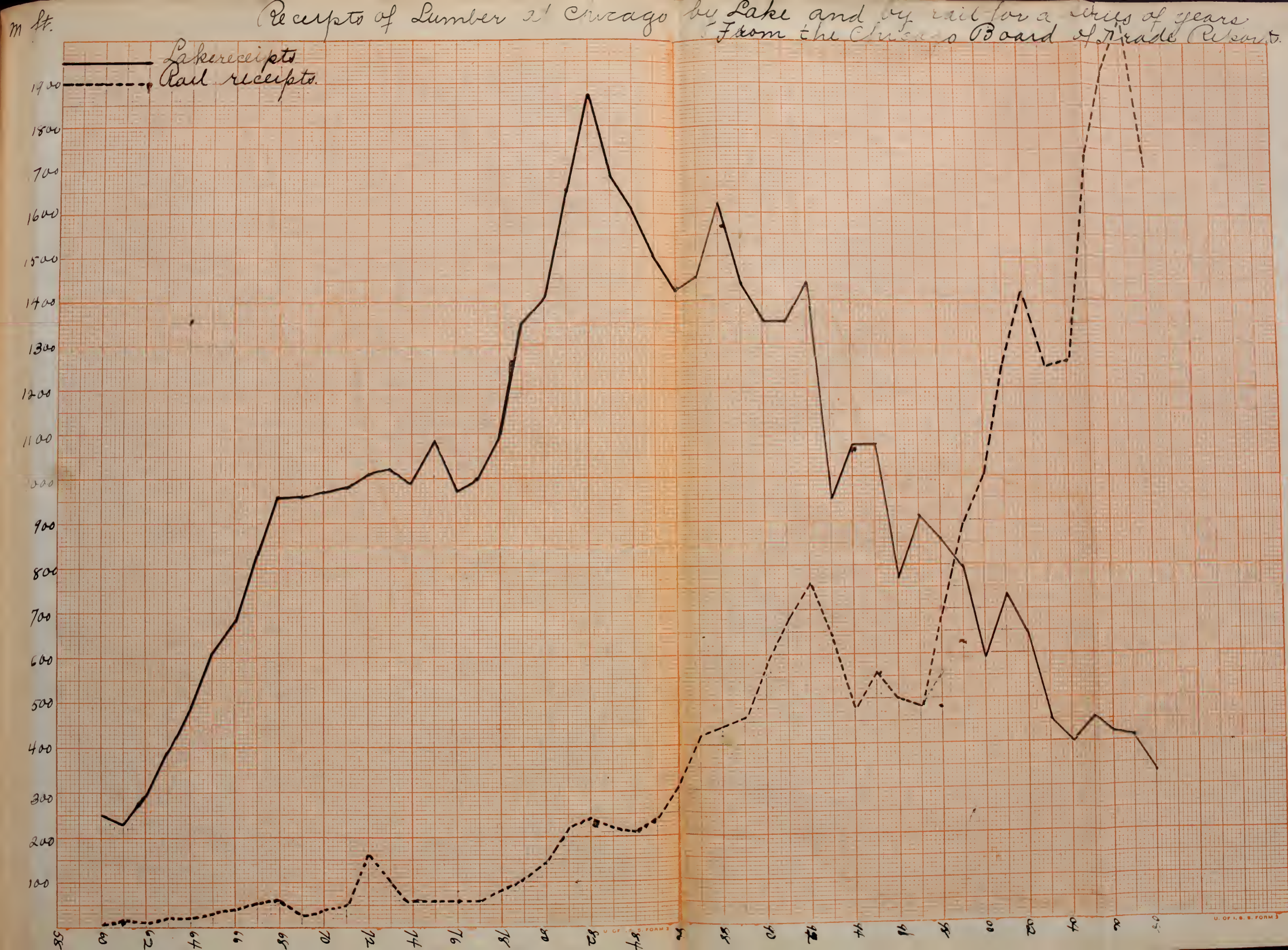
182

arge

in-

red

is



Lumber.

Lumber has always been an important article received at Chicago, and today Chicago is the greatest lumber market in the country. The opening of the Illinois Michigan Canal in 1848 gave a great impetus to the lumber trade of Chicago. Chicago's hinterland was rapidly filling in with emigrants, who demanded lumber for building purposes. The construction of railroads which was going on at this time also required lumber, and by the opening of the canal a cheap means of transporting the lumber was afforded.¹ The year the canal was opened the receipts of lumber at Chicago was almost double that of the previous year. In 1854 the receipts of lumber by lake were 217,124,120 feet, and it is very probable that these figures are rather low. In 1854, the canal carried out of Chicago 65,398,740 feet of lumber. From 1860 onward the receipts of lumber by lake steadily increased and reached its zenith in 1882 when 1,876,976,000 feet were received. To keep pace with this large and increasing business the lumber trade of Chicago was forced to move southward in 1868 to a district prepared for it. In 1881, another district was added and in 1884 several yards were established on the north branch of the river, chiefly to supply the retail trade.²

Rail receipts increased very slowly until 1887. Lake receipts have declined since 1884, and as they have declined rail receipts have increased. In 1899, rail receipts exceeded lake receipts by

--o--

¹ Annual Rev. Com. 1855. 15.

² Andreas, Hist. of Chi. III, 368.

105,000,000 feet, and in 1908, the lake receipts of lumber were only 19.7% of the rail receipts.

The reason for this decline in the lake lumber traffic is very easily found. For over half a century the states of Michigan, Wisconsin, and Minnesota have supplied large amounts of lumber. The question of conserving this vast supply arose in the minds of some very early, as is shown by the following quotation: "As the years roll by, and continued inroads are ^{made} being on the pine forests of Michigan and Wisconsin, and in view of the still enormous prospective demand for lumber from this city, the question of the possibility of exhausting the supply becomes a pertinent one, and suggests reasonable husbandry of the acres yet untouched. Vast quantities of lumber are shipped hence as far west as Nebraska, and when the territory within the radius that must draw its supplies from here shall all be settled up, the amount of lumber that will be required must be of so great magnitude that it may well suggest to reflective minds the necessity of adopting other means of building and fencing than depending solely on pine lumber as hitherto."¹

This exploitation of the white pine forests of the north was continued till in 1880 these northern states occupied first rank in the lumber production of the United States, producing one-third of the total output of the country. Since 1890, the lumber production of these states has decreased both absolutely and relatively ^{in amount} and in 1905 they were surpassed by the Southern states.² Today four-fifths of the lumber brought into Chicago is carried by rail.

--o--

¹ Chi. B'd Trade Rep. 1869. Intro. 10..

² Rep. of Com. of Corp. Part II, 180.
Ind. Com. Rep. IX, 432.

It is very evident that the railroads are destined to obtain the lumber traffic, even that of the North. As the forests are being constantly depleted it becomes necessary to go farther and farther inland for lumber,^{and} as it is not profitable to haul the logs to streams upon which to float them down to the mills, the mills must follow the retreat of the forests. Neither does it pay to haul the lumber down to the lakes and to pay the transshipment charges at both ends of the lake trip. The railroads have better terminal facilities for handling the lumber and can usually place the lumber in convenient lots exactly where it is desired, thus saving the cartage charges necessary to transport the lumber from the docks to the yards. Formerly wholesale dealers sorted the lumber. Now the lumber is sorted at the mills and can be more conveniently shipped by rail. One item often of importance is the fact that when lumber is shipped by rail in convenient cargo lots, the lumber may be rebilled to the country dealer without any extra expense.¹

It was the opinion expressed by many that if the duty of \$2.00 per thousand feet were removed from Canadian lumber a great revival would take place in the lake lumber trade.² This duty has been lowered to \$1.25 per thousand feet, but as the new duty has been in effect only a short time, one cannot tell what effect it has had upon the lake receipts at Chicago. The condition of the Chicago River will probably operate to prevent a great increase

--O--

¹ Tunell, Statistics. 95.

² Transportation by Water 1906. 137.
Chi. Har. Com. 349.

in lake receipts at Chicago. While no doubt receipts by lake will increase with the removal of this duty, yet the increased receipts from Canada will probably no more than offset the decline of our own production, and it will not be long before these forests will recede from the lakes so that in time it will be more profitable to ship by rail also. The lake trade of Chicago in lumber then is decreasing through a natural cause, and through a cause that cannot be remedied although it may be stayed for a short time.

The facilities for handling lumber have practically not been improved, as the product does not lend itself readily to mechanical manipulation. The lumber fleet is usually made up of old boats almost useless for anything else, as boats loaded with lumber do not sink and the cargo suffers little damage from water. Most of the boats are small. The Hines Lumber Company of Chicago owned the largest lumber fleet on the lakes in 1907 - though this was a very small fleet.¹

--O--

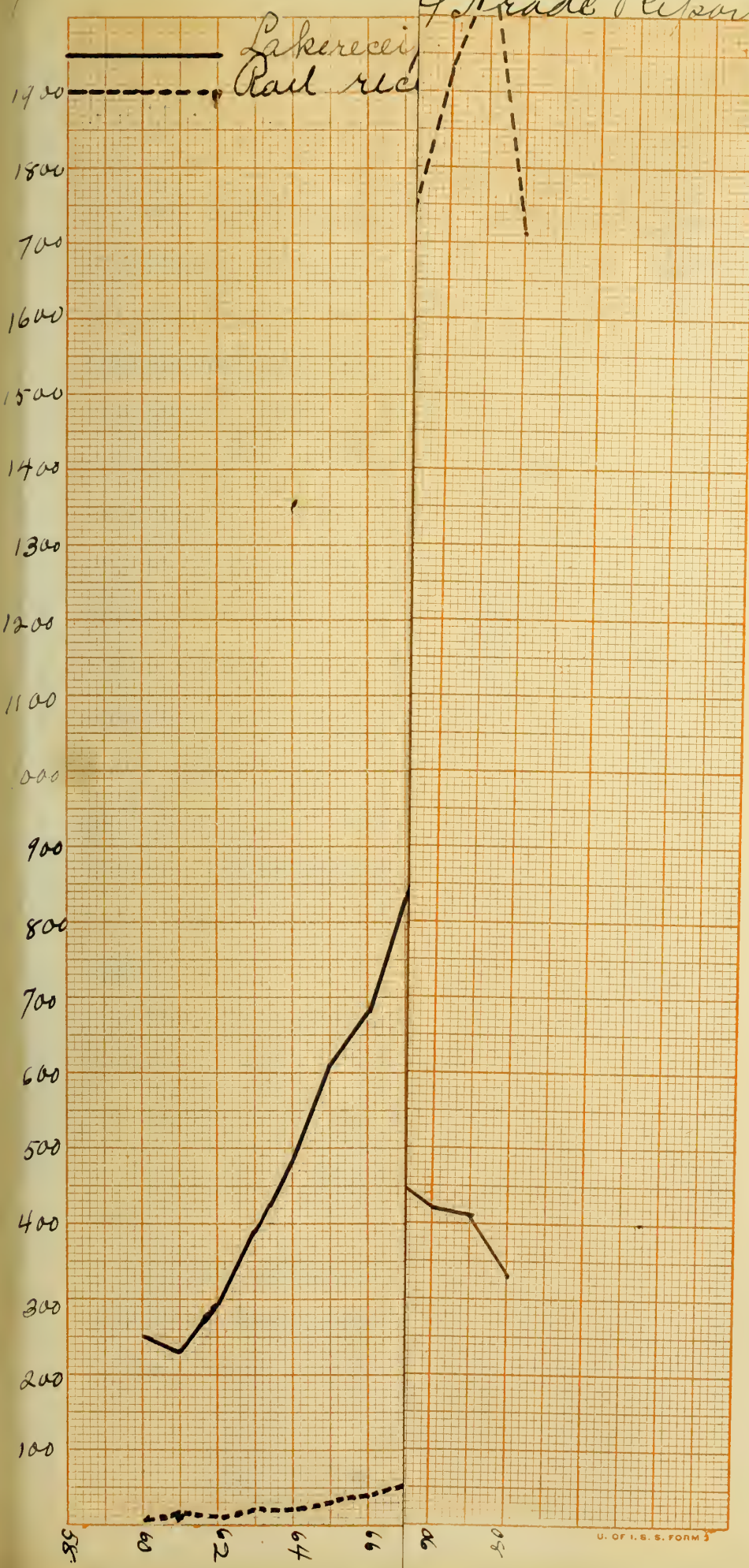
¹ Thayer, Annals Am. Acad. Jan., 1908. 133.

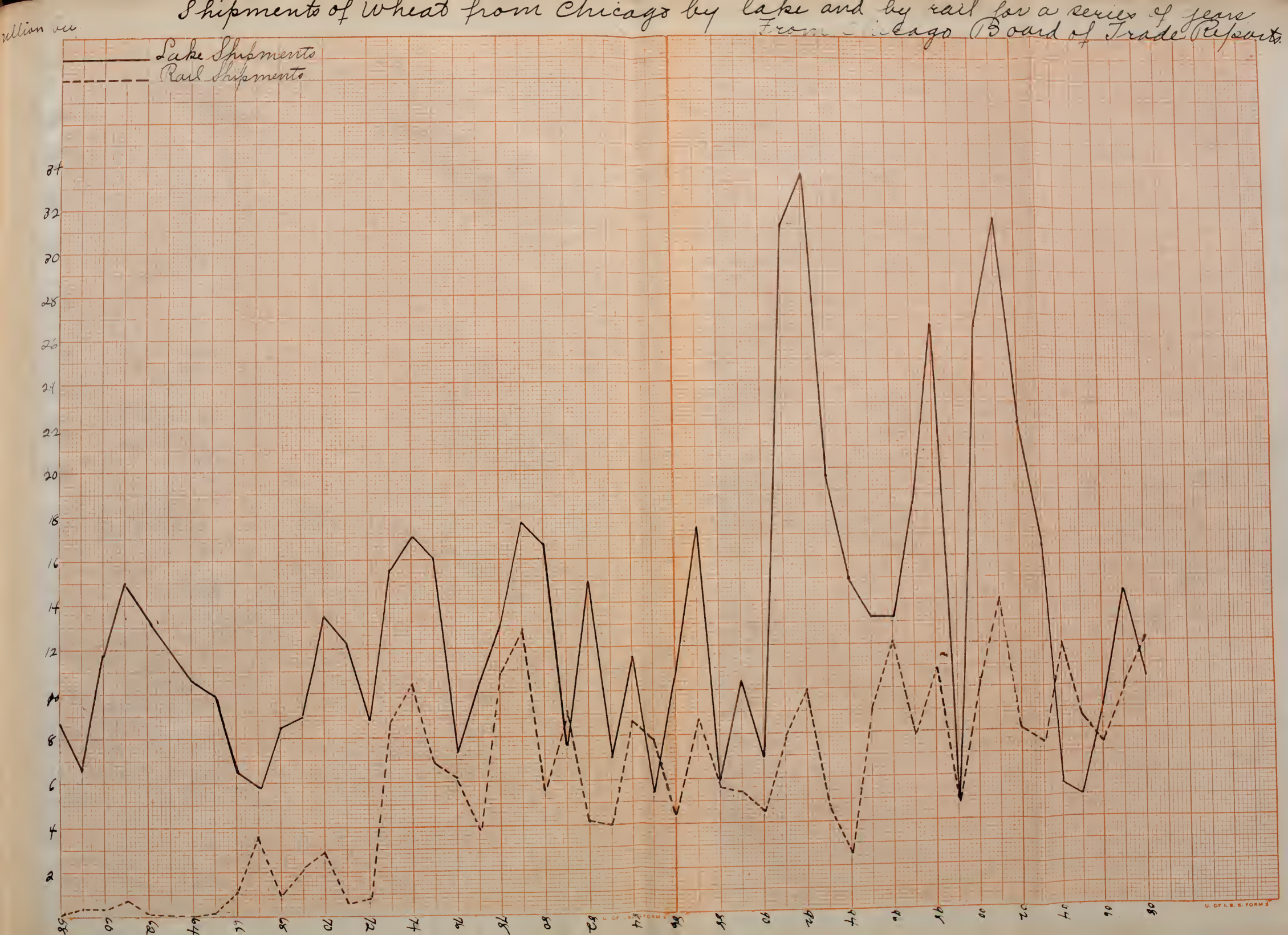
Lumber Receipts by Lake and by Rail at Chicago.

Year.	Lake. (M. feet.)	Rail. (M. feet.)
1860	254,499	7,995
1861	235,688	13,640
1862	295,270	10,404
1863	392,800	20,501
1864	480,165	21,427
1865	614,020	33,125
1866	687,851	42,206
1867	830,035	52,626
1868	965,860	62,634
1869	967,897	29,839
1870	979,759	39,239
1871	984,758	54,570
1872	1,017,319	166,340
1873	1,020,638	102,730
1874	993,751	66,337
1875	1,080,599	66,594
1876	971,416	68,369
1877	1,002,501	63,951
1878	1,093,088	87,498
1879	1,351,149	118,729
1880	1,419,974	141,805
1881	1,657,823	221,099
1882	1,872,976	244,569
1883	1,685,719	224,191
1884	1,610,166	212,149
1885	1,504,186	240,706
1886	1,427,795	315,189
1887	1,457,173	422,995
1888	1,626,408	440,519
1889	1,447,399	462,044
1890	1,359,921	581,471
1891	1,359,315	686,103
1892	1,443,769	760,105
1893	955,280	645,397
1894	1,075,763	486,764
1895	1,073,847	564,283
1896	779,292	507,351
1897	917,212	489,368
1898	869,922	686,725
1899	793,788	898,793
1900	590,270	1,006,476
1901	730,691	1,256,889
1902	644,076	1,425,309
1903	459,848	1,251,500
1904	402,831	1,267,433
1905	458,198	1,735,342
1906	429,835	1,934,021
1907	411,947	2,067,511
1908	339,029	1,714,610

Compiled from Chicago Board of Trade Reports.

ft. Series of years
of Trade Report.





Coal.

One characteristic of both lake and rail traffic is the preponderance of eastbound traffic over westbound. To the majority of lake vessels and to the railroads, coal means a return cargo. The traffic has been of great importance, for otherwise the majority of the boats would have to return light. In former times most of Chicago's coal was received by lake ~~at Chicago~~ from the Lake Erie ports. Since the development of the iron ore industry, most of the coal shipped from the Lower Lake ports is received at the Upper Lake ports, because the iron ore ships are returning to these places and do not wish to return light. As a consequence, coal has been transported at very low rates. In 1887, the average lake rate on hard coal from Buffalo to Chicago was \$1.05, in 1897; \$.29 and in 1907 \$.46 per ton. As contrasted with these rates, showing the effect of iron ore boats carrying coal, the average rate from Buffalo to Duluth in 1887 was \$.70, in 1897 \$.26 and in 1907 \$.35.¹

The chief distributing ports of coal to the West on the Upper Lakes are Duluth, Superior, Milwaukee and Chicago. The lake rates are in favor of the first three cities named, which receive most of their stock by lake, while Chicago receives most of her coal by rail.

In the middle of the last century coal was received at Chicago mostly by lake. In 1854, 52,197 tons came by lake, and 4,571 tons by canal and rail.² From the table at the end of this discussion

--o--

¹ Rates for 1887-97 taken from Tunell, 91; 1907 Thayer, 133.
² Annual Rev. of Com. of Chi. 1855. 18.

it may be seen that while lake receipts continued to increase absolutely, they did not increase relatively. In 1871 the lake receipts of coal were only 47% of the total receipts. Lake receipts increased in amount until about 1890, since when they have remained about stationary, while rail receipts^{have} increased enormously. In 1907, 93% of the coal received at Chicago came by rail.

The coal received by lake at Chicago is mostly hard coal. The chief point of shipment is Buffalo which receives it by rail from the mines. Although the distance between Chicago and Buffalo is 883 miles by lake and 553 miles by rail, yet in the shipment of hard coal the lake has always been a successful rival of the railroad.

The case has been different though with soft coal. There are two reasons for this difference: (1) because of the development of the soft coal mines of Illinois and Indiana, the rail rates from these mines to Chicago are less than the rail rates from the Eastern mines to the lake ports; (2) Soft coal, because of its physical characteristics, is very hard to handle, and the difficulties of transshipment are greatly lessened when shipped by rail than when shipped by lake. Then, too, the railroads penetrate all parts of the city with spurs and place the coal, in convenient cargo lots, almost exactly where wanted. Manifestly, lake boats cannot do this, and to deliver the coal from the boats involves, often, expensive drayage charges. Supplies may be delivered from day to day when shipped by rail and there is not so great a need for storage facilities as when shipped by lake in large cargoes.¹

The existing coal docks of Chicago are very inadequate. Mr. George Marcy, President of the Armour Grain Company, in his testimony¹ Chi. Har. Com. 255 ff.

mony before the Chicago Harbor Commission said that there were not a dozen coal docks in the city, and that coal would not come to the city unless adequate docks were built.¹

It is claimed that one serious hindrance to the increase of the Chicago coal trade by lake, besides the inadequate dock facilities, is the current of the river which almost prohibits large boats, such as carry coal, from entering. The lake rate of coal to Milwaukee is \$.10 less than the rate to Chicago² and the reason given is the navigation difficulties of the Chicago River. Many believe that by remedying this defect the lake trade in coal will be increased. It hardly seems economically justifiable to increase the lake trade of bituminous coal, when coal can be obtained so much more cheaply by rail. As to the hard coal, the output of which is limited by the corporations owning the mines, there seems to be little reasonable hopes of increasing the lake supply of it.³

Very little improvement has been made in the facilities for handling anthracite coal. The following quotation gives a very excellent idea of the improvements made in the facilities for handling soft coal. "Up to about 1873 coal was handled at Chicago, and presumably at other lake ports, in a very crude way. The coal was removed from the hold of the ship by means of buckets made from kerosene oil barrels (the upper third of which had been sawed off) and a rope lashing for a handle. These buckets were raised by horse power - the horse traveling back and forth. On a temporary

--o--

¹ Chi. Har. Com. 367.

² Ibid. 368.

³ Ibid. 206.

stage the coal was dumped into wheel-barrows, and then wheeled back over a 'spring run' made of planks supported at either end. This work seemed to have been difficult, for the men engaged in it received \$.75 per hour. The shovellers in the hold received from fourteen to eighteen cents per ton. The first important departure from this system was made about 1873. At this time the 'mast and gaff' were employed as a derrick. An iron bucket holding about 500 pounds of coal replaced the wooden bucket and steam power was used in hoisting. Instead of being dumped into wheel-barrows the buckets were now emptied into tram cars, which were moved by hand. These improvements greatly reduced the cost of raising the coal from the hold and carrying it back on the dock, but it did not reduce the labor of the men in the hold or the cost of shovelling. The second great departure was made when the coal was hoisted up over an inclined track that extended out over the vessel but which could be swung back flush with the dock when the cargo was discharged. Steam was used in hoisting and the buckets were dumped into a hopper in the derrick. Connected with the derrick was an automatic tramway which was higher at the dock than at the point of discharge. The car dumped automatically and was returned automatically by a weight that had been raised by the car as it ran out but which was dropped when the car discharged its load. The buckets now held from 1,200 to 2,200 pounds of coal instead of 500 pounds and also dumped automatically. These improvements still further reduced the cost of handling the coal after it was hoisted. They were introduced in the years from 1873 to 1893. In the spring of 1893 the self-filling 'clam-shell' proved successful. The 'clam-shells' could not be swung either way under the hatch opening

so scrapers were devised for bringing the coal directly under the hatch. The tramways have also been greatly improved, and coal can now be carried back a mile for the same cost as it can be delivered on the dock front."¹

--o--

¹ Tunell, Statistics. 85.

Receipts of Coal by Lake, and Total Receipts.

Year.	Lake Receipts (Tons).	Total Receipts (Tons).
1858	76,571	87-290
1859	111,506	131,204
1860	117,646	170,397
1861	168,879	211,586
1862	195,099	218,423
1863	244,624	248,196
1864		
1865	251,038	323,275
1866	15,060	344,854
1867	288,771	496,193
1868	391,313	546,208
1869	510,876	799,000
1870	522,580	887,474
1871	515,253	1,081,476
1872	586,585	1,398,024
1873	737,944	1,668,267
1874	661,583	1,359,496
1875	748,706	1,641,496
1876	711,576	1,619,033
1877	804,759	1,749,091
1878	730,000	1,832,033
1879	746,829	2,384,974
1880	746,304	2,706,088
1881	833,473	3,399,427
1882	933,043	3,689,798
1883	933,591	3,789,108
1884	1,032,551	3,842,796
1885	971,413	3,978,675
1886	933,326	4,056,018
1887	941,847	5,260,680
1888	1,363,421	5,517,359
1889	1,323,821	4,837,682
1890	1,100,562	4,737,384
1891	1,227,023	5,201,633
1892	1,334,976	5,529,468
1893	1,299,973	6,368,375
1894	1,208,120	5,336,124
1895	1,254,876	6,091,284
1896	1,351,699	6,322,773
1897	1,318,965	6,810,222
1898	1,527,511	7,387,200
1899	1,302,740	8,668,056
1900	991,297	8,839,657
1901	1,075,866	9,439,952
1902	299,604	9,834,957
1903	1,262,111	11,359,022
1904	1,043,906	10,758,264
1905	967,261	10,817,681
1906	938,151	12,246,529
1907	1,454,268	

Note. Since 1902, the Chicago Board of Trade has not given figures concerning the coal receipts. The statistics since 1902 are taken from the Monthly Summary and ^{from} Mineral Resources.

Iron Traffic.

The principal commodity moved upon the Great Lakes today, and the one that forms the bulk of the eastbound traffic, is iron ore. This ore is obtained from the Lake Superior region, today, the most important iron region in the world, and is shipped mostly to the Lake Erie ports although the ports on the southern shore of Lake Michigan levy a large quota of ore. Almost all of the ore is obtained from five ranges - the Marquette in Michigan, the oldest mine, the Menominee, the next to the largest, and the Gogebic, the producer of the richest ores, extending across Michigan and Wisconsin, the Vermilion, the smallest range and the Mesabi, the newest and most productive range, both in Minnesota. From these mines, the ore is hauled by rail to five Lake ports, Duluth-Superior, Two Harbors, Ashland, Marquette and Escanaba, which ship it by lake to the places where it is required.¹

As iron ore must, because of its bulk and weight, have cheap transportation, the facilities for handling it in transshipment are perhaps the most highly developed of any facilities for handling freight. "In 1854 the only method of transportation between the mines and the Lakes was by sleigh. During the summer season the wagon roads, such as existed, were next to impassable. From the dock ore was loaded on the decks of vessels by means of wheelbarrows. At St. Marys Falls it was unloaded, carried around the falls on a strap railroad equipped with cars drawn by horses, and again wheeled aboard vessels and taken to the lower lake ports. This strap road, completed in 1851, was the first railroad of any kind built in the Upper Peninsula of Michigan.

¹ Rep. of Com. of Corp. Part II, 154.

"On June 18, 1855, the primitive strap road around the rapids was rendered useless by the opening of the Sault Ste. Marie Canal. Meantime a similar road was built between the mines and Marquette. Longitudinal sleepers with strap rails were laid and horse cars were run, carrying ore at a nominal rate of \$1.00 a ton. Its capacity was very much limited however, as each team made but one round trip a day.

"In 1857 the railroad, incorporated as the Iron Mountain Railroad, ultimately became a part of the Marquette, Houghton, and Ontonagon, was finished from Marquette to the mines, a distance of about sixteen miles. At the terminus of this road was built, in 1858, the first pocket system of ore loading in the world. It consisted of 8 or 10 pockets with chute arrangements. The pockets held only a few tons each and were small in comparison with the immense structures of today, whereby 10,000 to 13,000 tons may be deposited in the hold of a vessel in a few hours.

"Eleven years elapsed before the second ore-carrying road was built in the Superior region. This road connected the mines with Lake Michigan. In December, 1864, the Chicago and Northwestern opened its Peninsula line to Escanaba, a distance of sixty-two miles, at the same time building an ore dock with pockets having a capacity of 20,000 tons and unloading directly into vessels without shovelling."¹

As contrasted with present day methods these devices seem rather primitive. As a rule the mines are from ten to sixty miles back from the lake. The ore, after being dug and loaded upon the cars by large steam shovels, is carried to the lakes in specially

--o--

¹ Rep. Com. of Corp. Part II. 153.

constructed gondola cars. The docks are so constructed that the cars are run out on them, the hoppers in the bottom of the cars are let down, and the ore discharged by gravity into pockets from the bottom of which iron chutes lead to the vessel lying alongside the dock. The ore is chuted by gravity into the hold at as many points as there are hatches - thus requiring very little manual labor.¹ The ore receiving docks are also well equipped for performing the work of unloading so that vessels are unloaded very swiftly.

As the traffic in iron ore has increased and larger and larger vessels have been constructed each year to carry on this traffic it has been necessary to deepen the channels, especially harbor channels, and those connecting the Lakes.

Because of improved methods of mining, deepened channels, and better facilities for loading and unloading vessels, transportation costs upon iron ore have been reduced to a very low point. Low freight charges are absolutely necessary if iron ore is to be moved at all, because of its great bulk and weight. These improvements have also lessened the time spent by ships between ports as well as in ports, increasing the number of round trips a ship could make in a season - an end greatly to be desired as iron ore ships are either owned by the steel companies or are leased for the season.

Rates are now practically fixed by the Pittsburg Steamship Co., subsidiary to the United States Steel Corporation, and owning the the largest fleet of boats on the lakes. This company decides what rates their boats will carry for and what prices it shall pay

--o--

¹ Thayer, Annals Amer. Acad. Jan. 1908. 128.

to others to carry the balance of the ore. In 1907 \$.75 per ton was charged for carrying the ore from the head of Lake Superior to Lake Erie, \$.70 from Marquette, \$.60 from Escanaba to Lake Erie ports, and \$.35 from Escanaba to Chicago. In 1906 \$.20 per ton was charged for unloading ore and \$.03 for trimming in the hold. Modern vessels - the newest ones - though, need no trimming.¹

Very little iron ore is being or has been shipped from the Upper Lakes by rail because it will not bear the heavy rail charges. In 1900, out of a total of 19,057,373 tons shipped, only 500,000 tons went by rail.²

The first shipment of iron ore received at Chicago as recorded in the Chicago Board of Trade Reports was received in 1872. Receipts increased slowly until 1890, when the statistics include the receipts at South Chicago. This latter city is rapidly becoming an iron manufacturing city. Since 1895 the receipts of ore have increased very much and in 1908 they amounted to 4,419,083 tons. Most of this ore goes to South Chicago, in fact very little goes to Chicago. In 1907, 142,076 tons of ore and ore products were received by lake at Chicago as against 4,719,914 tons received at South Chicago.³ With the establishment of steel works at Gary and at Indiana Harbor, Indiana, this region including South Chicago will soon become a very large steel manufacturing region, to which iron ore will be transported in increasing amounts. The com-

--o--

¹ Thayer, Annals Am. Acad. Jan. 1908, 130.

² Rep. Ind. Com. XIX, 473.

³ Chi. Har. Com. 277, 279.
Figures taken from the U. S. Engineers' Rep.

bined lake tonnages of Chicago and South Chicago are being maintained at about a level, and the increasing receipts of iron ore at South Chicago is offsetting the decreasing shipments and receipts of grain and lumber at Chicago. Chicago does not receive much iron ore, nor does it want to receive it. The iron ore traffic means the establishment of large steel plants upon the river, and an increase of the smoke nuisance so that Chicago is very willing and very anxious that the steel trade be located and encouraged at South Chicago.

Iron.

Lake Receipts at Chicago.¹

Year.	Tons.	Year.	Tons.
1872	58,998	1890	788,854
1873	60,833	1891	1,048,055
1874	37,175	1892	1,439,122
1875	63,744	1893	350,725
1876	94,517	1894	898,587
1877	89,131	1895	1,903,205
1878	110,962	1896	1,281,157
1879	111,104	1897	1,820,212
1880	236,879	1898	2,275,966
1881	264,365	1899	2,264,078
1882	235,161	1900	2,380,973
1883	66,784	1901	2,732,760
1884	140,443	1902	3,387,926
1885	260,778	1903	3,237,793
1886	418,106	1904	2,573,622
1887	284,600	1905	3,324,320
1888	132,460	1906	4,284,332
1889	652,847	1907	4,859,312
		1908	4,419,083

Package Freight.

Recently there has been a notable increase in the amount of package freight received at and shipped from Chicago by lake, and with proper terminal facilities, Chicago may reasonably hope for still further increase. The following statistics show the increase. In 1900, the total^{lake} package freight of Chicago amounted to 906,328 net tons, in 1905, 1,134,594, in 1906, 1,035,317, in 1907, 1,089,074, in 1908, 897,754, and in 1909, 1,046,373.¹ The harbor facilities for handling this important lake traffic are totally inadequate, and the lack of them occasions greater expense and delay than at any other port.²

Package freight consists of two kinds - local and long distance. The fruit traffic is of increasing importance in the first class. If the trip can be made in one night, fruit will be shipped by lake because it arrives in better condition than if shipped by rail. The long distance traffic, which is increasing in amount, is the more important of the two.

The fact, though, that all the package lines, with the exception of the Pacific Coast Borax Co. which operates the Jesse H. Farwell between Buffalo and Chicago, are owned or controlled by the large railroads is of great significance. If Buffalo were a destination port instead of a transit port, any boat could carry package freight. As it is, package freight is prorated through to New York by the railroads at Buffalo, and the local rail charges from Buffalo to New York are so high as to leave little to an in-

--o--

¹ From Monthly Summary.

² Chi. Har. Com. 353.

dependent boat for its lake trip. At Buffalo the railroads own the best docks in the city and will not permit the independent boats to use them. This causes considerable expense and inconvenience to the latter. The Erie Canal is too shallow to be of any aid to the independent boat in controlling the railroads. It is claimed too that the canal boat owners have formed a union and act in harmony with the railroads.¹

As a result of this railroad ownership of the package freight lines, there seems to be a tendency to regulate water rates by rail rates - to advance or reduce water rates as rail rates are advanced or reduced. This tendency is shown in the concerted movement of the railroads to advance rates by changing the classification schedule.² That both lake and rail rates are increasing just as the railroads are gaining control of the package lines, only goes to show the significance of this railroad ownership.

From the foregoing study it is seen that the lake trade of Chicago is decreasing in grain, coal, and lumber and increasing in iron ore and general package freight. A study of the total tonnage of Chicago and of South Chicago shows that while the port of Chicago is just holding her own, the decreasing tonnage of the Chicago River is made up by the increasing tonnage of the Calumet River (See table and statistics below.), and that since 1906 receipts by lake at South Chicago have exceeded those at the Chicago River. The receipts of iron ore at South Chicago maintain the general

--o--

¹ Chi. Har. Com. 187 ff.

² Thayer, Annals Amer. Acad. Jan. 1908. 190 ff.
Ind. Com. XIX, 281.
Chi. Har. Com. 190 ff.

level of Chicago's lake trade.

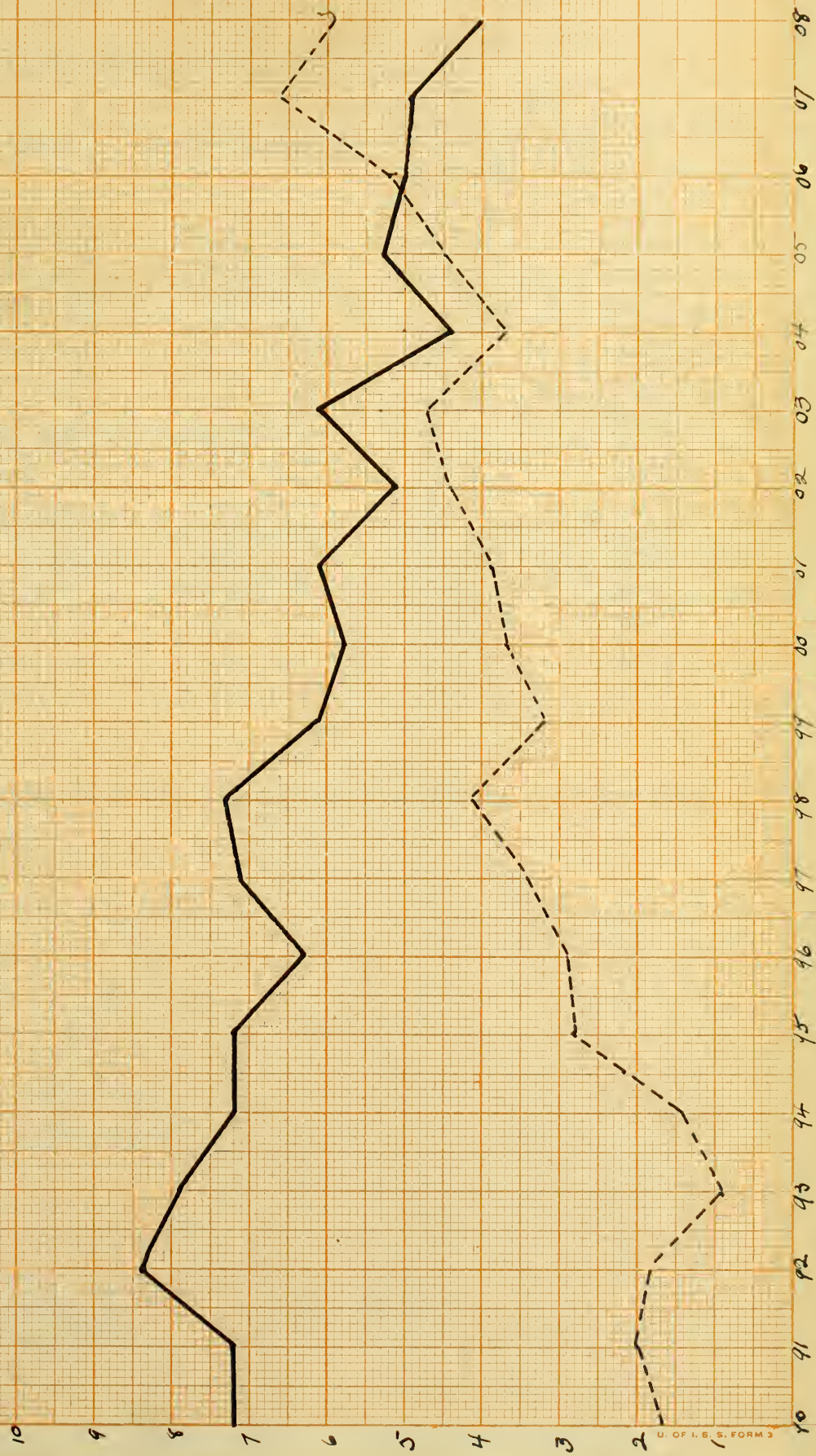
A comparison of the total tonnage of Chicago with that of several other lake ports brings out some very interesting facts. From the table and the curves showing the total tonnage of Buffalo, and of Duluth and Superior, shipping ports, Cleveland and Milwaukee, receiving ports, it is seen that in 1903 only one port on the Great Lakes, Buffalo, exceeded Chicago in tonnage. In 1904 the total tonnages of Superior, Duluth and Buffalo were greater than that of Chicago, and with the exception of the year 1905, when Superior fell slightly below Chicago, these ports have remained in the lead. The increase in the tonnage of Duluth and of Superior is due to the increased shipment of wheat from those ports. As Buffalo is the great grain receiving port of the lakes, it has kept pace with Duluth and Superior. Although Chicago has not declined in the total tonnage since 1890, she has just succeeded in holding her own due to the increased receipts of iron ore at South Chicago.

Many reasons have been given for this stationary state of Chicago's lake trade. Most of the blame for this decline is placed upon the condition of the Chicago River and to the lack of proper terminal facilities for handling the freight. A brief study of the Chicago Harbor problem will serve to show what relief is to be obtained by the solving of this vexed question.

Comparison of Chicago and South Chicago...

million tons

Chicago
South Chicago

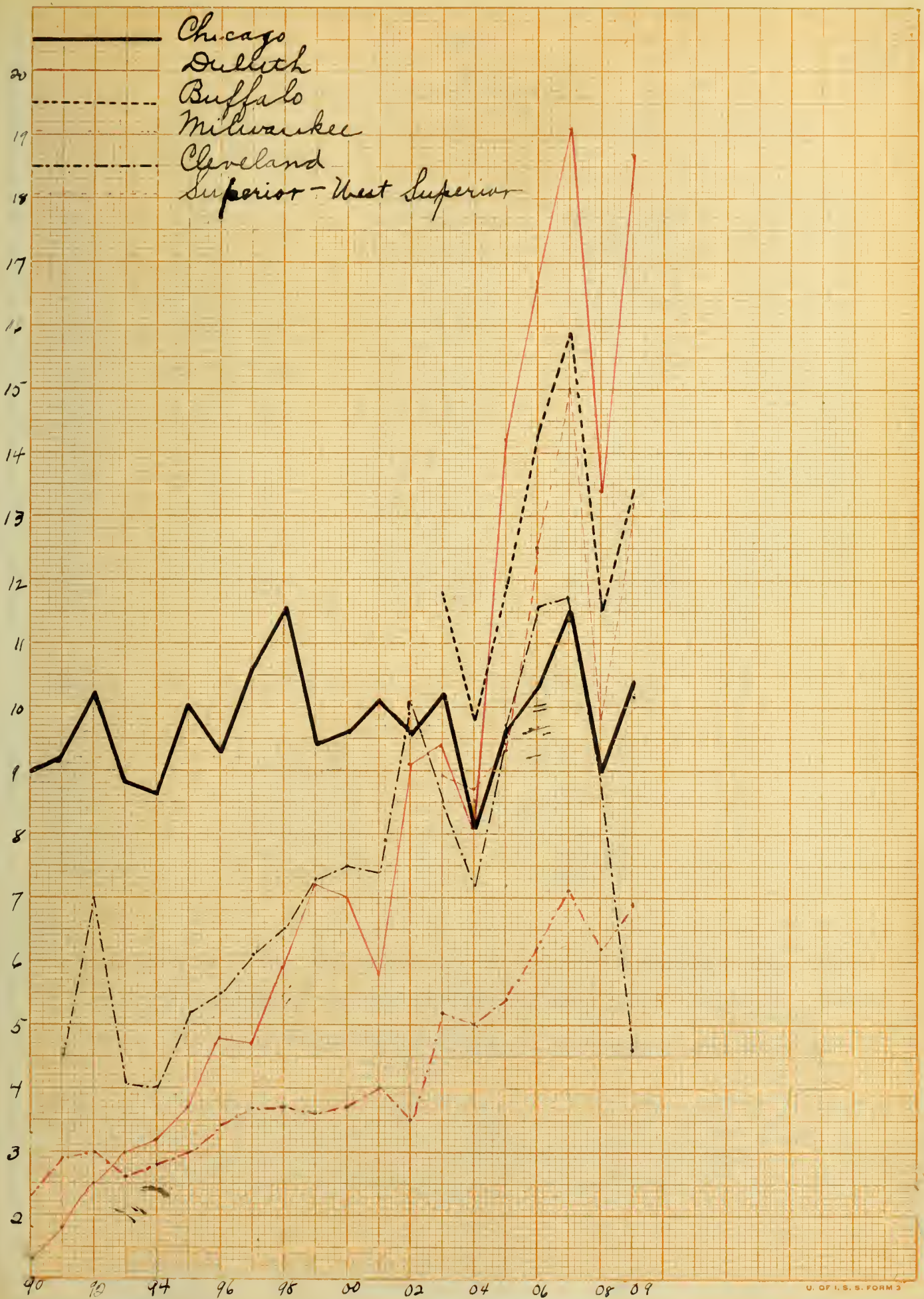


Total Freight Tonnages by Water.

Year.	Chicago.	South Chicago.	Percent of Whole Tonnage of Port.	
			Chicago.	South Chicago.
1890	7,207,514	1,796,401	80.8	19.2
1891	7,214,765	2,066,751	77.7	12.3
1892	8,412,992	1,822,907	80.2	19.8
1893	7,958,963	903,379	89.8	10.2
1894	7,209,236	1,436,897	83.3	16.7
1895	7,205,942	2,857,750	71.6	28.4
1896	6,347,163	2,973,724	67.1	32.9
1897	7,149,759	3,493,218	67.1	32.9
1898	7,391,454	4,117,526	64.5	35.5
1899	6,189,365	3,229,874	65.6	34.4
1900	5,873,070	3,783,674	60.8	39.2
1901	6,184,242	3,995,277	60.7	39.3
1902	5,184,792	4,454,428	53.7	46.3
1903	6,105,553	4,742,225	59.5	40.5
1904	4,446,071	3,728,260	54.7	45.3
1905	5,388,986	4,530,394	55.5	44.5
1906	5,011,786	5,290,326	48.3	51.7
1907	4,980,123	6,430,347	43.6	56.4
1908	4,025,170	5,932,153	44.2	55.8

Data obtained from the United States Engineers' Reports.

Total tonnage of several lake ports for a series of years



Total Freight Tonnages.

Year.	Chicago and South Chicago.	Milwaukee.	Cleveland.	Duluth.
1890	9,003,915	2,362,052		1,353,287
1891	9,281,516	2,916,479	4,512,765	1,876,885
1892	10,235,899	3,020,471	7,060,791	2,508,452
1893	8,862,341	2,661,827	4,189,922	3,061,942
1894	8,646,133	2,879,605	4,043,804	3,228,392
1895	10,063,692	3,096,055	5,282,599	3,748,070
1896	9,320,887	3,446,628	5,522,111	4,891,766
1897	10,642,977	3,750,346	6,118,731	4,776,080
1898	11,508,980	3,787,545	6,500,518	5,932,818
1899	9,419,239	3,662,786	7,390,921	7,230,206
1900	9,656,744	3,703,240	7,569,523	7,089,441
1901	10,179,519	4,037,597	7,484,810	5,816,583
1902	9,639,220	3,594,122	10,151,006	9,175,593
1903	10,242,421	5,211,963	8,562,264	9,478,420
1904	8,123,267	5,069,993	7,289,237	8,152,918
1905	9,697,784	5,481,667	9,719,918	14,216,018
1906	10,346,927	6,234,876	11,670,280	16,786,859
1907	11,562,377	7,148,775	11,799,433	19,149,350
1908	9,092,253	6,213,863	8,976,429	13,463,943
1909	10,485,523	6,937,420	4,635,772	18,761,401

Year.	Buffalo.	Superior and West Superior.
1903	11,891,897	8,932,165
1904	9,834,029	8,723,063
1905	11,943,229	9,389,777
1906	14,345,007	12,582,260
1907	15,983,181	15,068,123
1908	11,515,772	9,854,671
1909	13,460,606	13,296,338

The data for the years up to and including the year 1902 was obtained from the United States Engineers' Reports. After that date from the Monthly Summary of Commerce and Finance.

Chapter IV.

The Chicago Harbor.

Water transportation has played an important part in the development of Chicago's commerce. The position of the Chicago River which afforded a short portage between the Illinois River and Lake Michigan served to locate the town of Chicago. That very river even though it was a sluggish, sand-clogged stream also determined the northern terminus of the Illinois Michigan Canal, which played such an important part in the early development of Chicago's commerce. To this terminus of the great inland water route formed by the Erie Canal and the Great Lakes very logically centred the railroads of the Middle West, till today Chicago is the greatest railroad centre in the world.

While Chicago has not forgotten the advantages she has derived from her railroads, yet she seems to have remained strangely indifferent to the value of her water facilities and stupidly to have permitted these facilities to deteriorate. Whereas she was at one time the leading port on the Upper Lakes, she has permitted Duluth and Superior to surpass her in lake tonnage, while hers has remained stationary for the past ten years. Chicago's hinterland is far richer than that of either of these cities. While it is true that the centre of wheat production has moved beyond Chicago's range, yet the centre of corn production has not ^{changed} nor is it likely to change. Not only has the grain trade declined but the coal and lumber receipts have fallen off. It is true that the receipts of

the former have declined^{chiefly} because of the development of nearby mines, and of the latter because of the depletion of the source of supplies. Many maintain, though, that had Chicago provided proper harbor accommodations for the handling of this trade the rapid decline would at least have been stayed. To the condition of the Chicago River is laid the chief blame for Chicago's lake trade decline.

The harbor of Chicago consists of the Chicago and Calumet Rivers, with their branches, forks and slips, and of the outer harbor of Chicago, enclosed by a breakwater. The Chicago River has been, and still is to a large extent, a narrow tortuous stream, obstructed by tunnels and bridges, and difficult to navigate because of its current. The Calumet River and harbor, situated at South Chicago, consists of an outer breakwater for the protection of the river, the chief harbor. The outer harbor of Chicago never has been used for commercial purposes, being today a harbor of refuge and a roadstead for small vessels and yachts.

Three authorities have jurisdiction over the maintenance and improvement of the Chicago Harbor - the War Department, the municipal authorities and the Sanitary District. Until the creation by the state of the Sanitary District in 1889, improvements were carried on chiefly by the United States War Department, and by private individuals. The part done by the War Department has been in the removal of obstacles to navigation, and has consisted chiefly in dredging and widening very slightly the main river and in forming and protecting an outer harbor at the mouth of the river. The Sanitary District has performed wonders in improving the navigation of the South Branch, by widening the river, by dredging it to a

uniform depth and by removing other obstacles to navigation. Whatever the Sanitary District does, however, is done for sanitary purposes in connection with the Sanitary Canal it has built. The Sanitary District has no authority to improve navigation. No aid, can, therefore, be expected from this authority in the improvement of the North Branch of the river. The municipal authorities have done very little indeed in regard to the river - in fact they have been almost entirely indifferent to the river interests. They have, however, performed some little service in dredging the river, by assisting the War Department in the removal of the tunnels and in putting up a few improved bridges. An example of the carelessness of the city in regard to the river is shown in the fact that no dock lines have been observed. Most of the dockage of the city has been built by business firms, and the docks jut into the river from one to six feet, either because of intentional encroachment or because of the unrestricted assertion of riparian rights.¹

A harbor at Chicago was first considered in 1814, in connection with the Illinois Michigan Canal. Work on the harbor was begun in 1833 by the Federal authorities.² Before the improvements made in this year, the Chicago River made a sharp bend about a half mile from the lake, leaving between the river and the lake a long sand-bar formed above the water by the action of the northeast gales. The river was given a straight outlet by a cut through this bar. A pier was extended into the lake for a distance of about 1,000 feet in a southeasterly direction from the north bank of the river.

--o--

¹ Annals, March, 1907. 118.

² Trans. C. E. of Cornell, V. 65.

Later a pier, paralleling the north pier, was constructed from the south bank of the river. The I. C. R. R. made cuts into the pier to form ship basins. Both piers were extended farther into the lake as the sand filled in behind them. In 1867, a gap of 300 feet was left in the north pier as an entrance to a ship basin which the Chicago Canal and Dock Co. constructed north of and adjacent to the river channel. The north pier was completed in 1869.¹

This early plan of improvement, which consisted of the construction of parallel piers to protect the entrance to the river against the formation of sand-bars, was changed by the Federal government in 1870. Realizing the increasing needs of Chicago's commerce the Federal government formulated the plan adopted in 1870 and modified in 1878: (1) Of forming an outer harbor or basin by enclosing a portion of Lake Michigan just south of and adjoining the entrance to the river in order to increase harbor facilities and to relieve overcrowding in the river; (2) Of constructing an exterior break-water of crib-work, to shelter the entrance of the river from northerly storms and to form a harbor of refuge at the southern end of Lake Michigan. This plan also included the maintenance and the dredging of the river entrance as far as the original shore line, the Rush St. Bridge.²

The break-water for the outer harbor was begun in 1870. The work on it was greatly interfered with by litigation with the I. C. R. R. In 1869, the Illinois legislature passed a bill authorizing the I. C. R. R. to control the proposed harbor improvement.

--O--

¹ Eng. Rep. '76. 433 ff.

² Ibid. '99. 2822.

Public opposition was so great as to cause the repeal of the bill in 1873. The I. C. R. R. contended, however, that the act of 1869 was a contract and could not be repealed. This litigation was not concluded until 1892 when the United States Supreme Court gave its decision against the railroad, upholding the validity of the repeal. The city settled disputed property rights with the railroad in 1895, and the area was turned over to the Park Commissioners and dedicated to park purposes.¹ Today this outer harbor, originally intended to accommodate Chicago's increasing commerce, is used only by yachts and small vessels.²

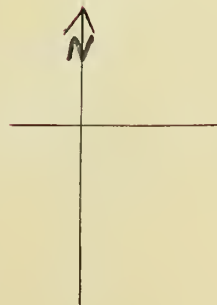
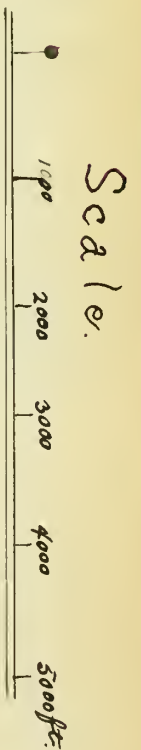
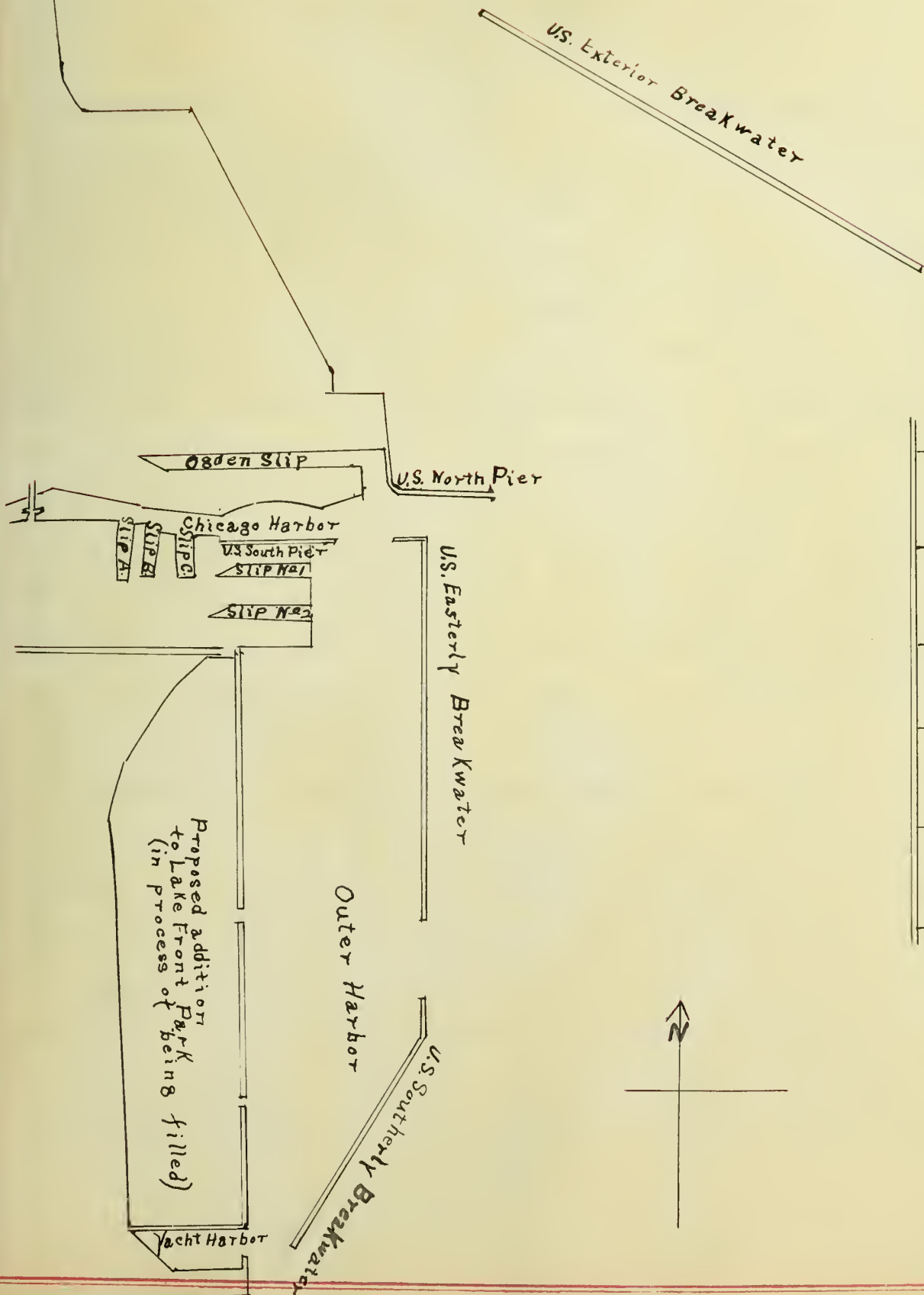
The Chicago River, constituting the inner and actual harbor of the city, bifurcates one mile from its mouth, forming the North and South Branches. The length of the main stream and its branches is about sixteen miles. Before 1896, when the Federal government entered upon the improvement of the river, the municipal authorities had dredged it to a depth of fifteen feet in the main river, and for less than fifteen feet in the branches. In 1896, the Federal government determined upon obtaining a depth of seventeen feet throughout the river, and secured this depth for five and a half miles on the South Branch and for six miles on the North Branch. In 1902, two turning basins (one in the North Branch, the other in the South Branch) dredged to 21 feet were provided for, and have been completed and partially docked. Today a project of 21 feet actual depth throughout the main channel and for a considerable distance up the branches is under construction and partially com-

--o--

¹ Chi. Har. Com. 38-9.

² Eng. Rep. '07. 706 ff.

Map Showing Present Chicago Harbor.



pleted.¹

The Sanitary Canal reversed the flow of the Chicago River, created a flow away from the lake and caused the shallowing of the Stock Yards Fork to less than 17 feet. To remedy this the branch was deepened to 20 feet, or 3 feet lower than the government plan. The district is now undertaking to maintain a width of 200 feet throughout the South Branch, and a depth of 21 feet.

Improvement by the Federal government on the Calumet Harbor began in 1870 and consisted of the construction of parallel piers 300 feet apart, and of dredging the space between them to 17 feet. The present project of the government consists (1) in deepening the outer harbor to 21 feet, (2) extending the piers and the break-water, and (3) in dredging the Calumet River a distance of two miles for a width of 200 feet, to a depth of 21 feet, and to a 17 foot depth beyond the two miles, and (4) to provide five turning basins. One basin has been completed and another partially so. The process of obtaining the rights to the property necessary to construct these basins is a very slow one.²

Agitation was begun for improved harbor facilities in 1908 when Mayor Busse sent a special message to the council calling attention to the decline of the shipping trade of Chicago. He pointed out that almost all of Chicago's lake front was already dedicated to park purposes, and that plans were on foot to take up the whole of the lake front for parks. In 1903 and in 1907, the General Assembly of Illinois authorized the Board of South Park Commissioners to take possession of that portion of the lake front lying be-

--o--

¹ Eng. Rep. '09. 708 ff.

² Ibid. 711 ff.

tween Grant and Jackson Parks. Under these laws the Commission was proceeding to acquire the riparian rights of the land owners and was planning an extensive park development. Mayor Busse claimed that the decline of Chicago's trade was due wholly to the inconvenience and inadequacy of harbor facilities. He said that the time had come for Chicago to decide whether in the future she would depend entirely upon the Chicago and Calumet rivers for her harbor, or whether she would utilize portions of the lake front for this purpose. He recommended that a commission be appointed to consider this question as well as the question of railroad terminals. In accordance with this recommendation the Chicago Harbor Commission was appointed. After careful study it made its report.¹

Chicago has before her three possibilities for forming a harbor. She can straighten and improve the Chicago River so as to make it navigable for lake vessels; she can utilize the lake front for a harbor and establish lighterage service upon the river; or she can develop the Calumet River for harbor purposes. Each plan has its advocates, and each plan has its disadvantages.

The Chicago River as a harbor has the advantage of penetrating deep into the city and bringing the harbor to places of business. However, it has many disadvantages in the way of its narrowness and crookedness, its current and its bridges. The river itself is narrow and contains frequent bends. The jutting docks are also a source of difficulty. In its report the Commission recommended that the Main River be widened to 250 feet, that the North and South Branches be widened to a minimum of 200 feet. It recommended

--O--

¹ Chi. Har. Com. 1 ff.

that the river be straightened by cutting off several elbows in the Main River and that the river be straightened in several places in both branches.¹ The process of condemning property is a slow one and little progress has been made along this suggestion.

The current of the river is perhaps the most serious obstacle to navigation. The Sanitary District Canal was built to protect the drinking water of Chicago by diverting the sewage of the city, diluted with fresh water, from Lake Michigan into the Illinois River. The Federal government gave permission to use the river as a feeder provided the current created did not exceed one and one fourth miles per hour. As a matter of fact, the current created is greater than one and one fourth miles per hour - in some places it is from two to three miles per hour.² This current of itself would not be such a serious matter, but taken in connection with the narrowness of the stream, and the frequency of the bridges it makes it difficult to handle large vessels, necessitating big tug bills, and frequently causes considerable damages both to vessels and to bridges.³ It is believed by some, though, that when the Sanitary District has completed its work, this defect will be remedied to a considerable extent.⁴

Numerous bridges span the river. From the mouth of the harbor to the junction of the Sanitary District Canal with the South Branch, 26 bridges, 10 of which are center pier bridges, cross the river. Over the Sanitary Canal are eight highway and seven railroad bridges.

--o--

¹ Har. Com. 55 ff.

² Trans. C. E. of Cornell, Vol. IX, 68.
Chi. Har. Com. 33.

³ Ibid. 34. ⁴ Ibid. J. W. S. Eng. Dec. '09. 754.

all built to swing. Nineteen bridges span the North Branch of the river, four the North Branch Canal. Ten of these are center pier bridges. These bridges are built with abutments extending for thirty feet into the river from each bank. These projections not only decrease the width of the river, but they increase the current, obstruct the free flow of the water and cause the accumulation of debris at the sides. Recently the Federal authorities have required that bridges on the main stream and on the South Branch be built with a minimum clear span of 140 feet. A width of 140 feet is not sufficient to permit two large boats to pass each other without dangerously increasing the current. Then too, the bridges are damaged frequently by vessels colliding with the abutments. Arched chords by requiring large vessels to pass directly under the centre of the bridge - a difficult feat to accomplish when there is a heavy wind - are also dangerous to navigation.¹

The maintenance of bridge hours, during which bridges are closed from two to four hours during the day, is a serious inconvenience to passenger boat interests by delaying the boats, especially when returning to their docks in the evening. The Commission recommended that the bridge hours be modified somewhat. They have recently been cut down a half hour both in the morning and in the evening.

The Commission also recommended that all center pier bridges be replaced by bridges of the bascule type, that a clear span of 200 feet be required hereafter, and that bridges be built with straight bottom chords instead of arched chords.²

--o--

¹ J. W. S. Eng. Dec. '09. 754.

² Chi. Har. Com. 29 ff.

Center pier bridges are being gradually replaced by bascule bridges through the efforts of the War Department and the Sanitary District. The War Department ordered the removal of the bridges at Lake and Indiana Streets as being obstructions to navigation and the Twelfth Street bridge, one of the worst obstructions on the river, is also to be removed. The city began work in September, 1909 upon the removal of the Fuller Street center pier bridge and with its removal the South Branch can be navigated by vessels of any draft to the Stock Yards.¹ In 1908, bascule bridges were completed and opened at North Avenue, and at North Halsted Street. A new bascule bridge has been completed at Kinzie Street, and new bridges at Erie and Polk Streets are to be completed in 1910 giving to the North Branch an unobstructed river channel of 140 feet.²

A bridge of a clear span of 200 feet is objected to (1) because of the engineering difficulties, (2) because of the cost, (3) because of the damage to the adjacent property. Very few streets are at right angles with the river, and when the bridges are not built at right angles a clear span of 200 feet will not afford a clear channel of 200 feet. The C. T. T. R. R. bridge near Taylor Street is a bascule bridge of 275 feet span, yet it affords a clear channel of only 120 feet. To obtain a clear channel of 200 feet it is said that this bridge would have to have a span of over 400 feet - at present a seeming engineering impossibility.³ It is felt, though, that if the city should demand a clear channel of 200 feet, engin-

--o--

¹ Chi. Com. Oct. 8, '09.

² Ibid. Nov. 26, '09.

³ J. W. S. Eng. Dec. '09. 764.

eers will meet this demand. The cost question is one that can be met when the question of the 200 foot clear channel has been settled by the engineers. It is thought that the damage to adjacent property, especially through the construction of the abutments by extending them back of the dock lines, instead of into the river as heretofore, may also be minimized.¹

The tunnels, by restricting the depth of the river to 17 feet, have been serious drawbacks to navigation. Large vessels could get by other obstructions, such as jutting docks, center pier bridges, but they could not get over the tunnels.² In 1904, the War Department ordered the removal or the lowering of three tunnels by April 15, 1906. Nothing was done until 1906 when the La Salle Street Tunnel was removed by blowing off its top. The Secretary of War extended the time for the removal of the Washington and Van Buren Street Bridges until 1908.³ The removal of these tunnels has increased the navigation possibilities of the river.

Thus it is seen that the obstacles in the Chicago River are many and apparently hard to overcome. In his report to the Harbor Commission, Geo. C. Sikes says:⁴ "I do not believe that the Chicago River, with its narrow and tortuous channel, its multitude of bridges and its current, all of which constitute permanent obstacles to navigation, can even make anything better than a third class harbor".

The majority favor a plan for establishing the harbor of Chi-

--o--

¹ J. S. W. Eng. Dec. '09. 765.

² Annals. V, 119.

³ Eng. Rep. '07. 627.

⁴ Page 186.

cago along the lake front, as they realize that the obstacles in the way of making the Chicago River the chief harbor are too many. The Chicago Harbor Commission¹ recommended the immediate construction, north of the mouth of the river, of piers to accommodate the passenger lines and the package freight and fruit lines. These interests are very poorly accommodated in the river, and the increase of their business is seriously handicapped by the lack of facilities. The Harbor Commission also recommended that the portion of the lake front between the river and Grant Park be reserved for harbor purposes, and, while the Commission realized the importance of park development, yet it thought that the lake front between Grant and Jackson Parks should not be irrevocably dedicated to park purposes.

Advocates of the outer harbor plan claim that a great advantage will be gained by the fact that the largest boats can float in it, and that ships will be able to enter the harbor under their own steam without the aid of tugs. They point out the accessibility of the railroads to the harbor. The Harbor Commission recommended that steps be taken to have the State turn over to the city the right of way of the now useless Illinois Michigan Canal, to be employed in furnishing additional terminal room for the railroads and to give them access to the harbor.² The advocates of the outer harbor suggest that a lighterage system be established upon the river leaving in the outer harbor the large shipping interests well provided for, and permitting only the smaller craft in the river.³ The objections to the outer harbor are that it will pollute the

--o--

¹ Page 40 ff.

² Chi. Har. Com. 43 ff. J. W. S. E. Dec. '09. 777.

³ W. S. E. Apr. '10. 153 ff.

lake water, for whose purification the city has spent so much, and that it will increase the smoke nuisance by establishing large industrial enterprises on the lake shore.¹

The commerce of the Calumet region has grown very much in the last few years and will grow much more. The mistakes made upon the Chicago River have been avoided to a large extent in the Calumet River. The suggestion that the Calumet River serve for Chicago's Harbor does not seem to be a very good one, and finds few supporters. While such shipping as iron ore goes to the Calumet, and will continue to go, as it is not wanted on the Chicago River, yet the return cargoes will be taken from Chicago. Provision must be made whereby the receiving port furnishes the return cargo, and the development of the Chicago harbor is the only plan that will supply this.

Since the consensus of opinion is that the outer harbor should be developed the question arises - by whom? The city, because of financial difficulties, cannot undertake the enterprise, although an attempt is being made to increase the limit of the city bond issue power. Two alternatives are left - the harbor is to be built either by the Sanitary District or by private corporations.

The Pugh Terminal Co., a corporation conducting a warehouse business on the north pier, has proposed to build an outer harbor just north of the river mouth. Their scheme contemplates three long piers, one each for incoming and outgoing freight, the other for the passenger and fruit business. They propose to establish a system of lighters upon the river for the transport of railway cars as well as loose freight. At convenient points on the river freight

--O--

¹ Chi. Har. Com. 42.

stations are to be provided for the receipt and distribution of freight. Altogether a very comprehensive system of freight handling and storage is planned. The Company is working under the old charter of the Chicago Canal and Dock Co., has received a statement from the Federal government saying their plans do not interfere with navigation, and are now dickering with the city over the terms of the franchise to be granted them.¹ Considerable opposition has been aroused against this company, and public opinion seems to favor the construction of the harbor by the Sanitary District. A bill granting to the District the right to build and operate this project was before the legislature but nothing was done with it.² Friends of this latter plan claim that as the District has sufficient funds and as their bonding power is not yet taxed, construction by the Sanitary District means speedy action as opposed to the delays incident to the building of the harbor by others. It is suggested that the District build the outer harbor and that some arrangement be made by which it may later be transferred to the city.³

As matters stand now, comparatively nothing has been done about the Chicago Harbor question since the report of the Commission, and there seems to be little likelihood of anything being accomplished for some time to come - too many conflicting interests must first be satisfied.

--o--

¹ P. 157 ff. J. W. S. E. Apr. '10.

² Ibid. 179 ff.

³ Chi. Com. Jan. 21, '10.

Conclusion.

A study of Chicago's lake trade shows that for fifteen years it has remained practically stationary, and there seems to be no immediate likelihood of reviving it. There has been a gradual decline in the shipment of grain and of flour from the port of Chicago. Flour shipments fell off before the recent general decline set in, because the railroads have very great advantages over the lakes in this traffic. This is also true of the decline in the shipment of oats from Chicago. The wheat traffic of Chicago is falling off because of the shifting of the centre of production so as to make the wheat area tributary to the port of Duluth and Superior. It seems very improbable that this trade can be regained. Duluth and Superior are becoming the logical wheat ports.

Corn receipts and shipments have declined because of the increased consumption of corn at or near the place of production, and because of the fact that through rates eastward from the local elevators are cheaper than the local rates to Chicago plus the through rate from there. The increased consumption of corn will contribute to the increase of the packing and other industries of Chicago, but it will add nothing to the lake trade. This home consumption will probably increase still further, for as diversified farming is becoming more developed, the raw products of the farm are converted into pork, beef, butter, and cheese. The difficulty of the rates may be adjusted, increasing somewhat the receipts of grain at Chicago.

The condition of the Chicago River, by preventing the entrance of the large lake bulk freighters, and the lack of warehouse fac-

ilities undoubtedly have been factors contributing to the decline of Chicago's grain traffic, but they have not had so great an influence as is commonly supposed. The decline of the grain traffic is a natural one, and one that cannot be remedied.

The decline of the lumber traffic is also due to natural causes. The depletion of the forests has cut down the available supply of lumber, and the receding of the forests from the lakes has given the advantage to the railroads. The lowering of the duty upon Canadian lumber will probably serve to offset for a time the decline in the production of the lake states. The facilities of the Chicago River for handling lumber must be improved, however, before there will be a great increase in the lake lumber traffic. The completion of the outer harbor with adequate terminal facilities and railway connections will aid this traffic. Inevitably, though, these Canadian forests will become depleted and will recede from the lakes giving the railroads again the advantage in the lumber trade.

The coal traffic of the lakes at Chicago has also decreased. The fact that bituminous coal can be brought into Chicago much more cheaply and handled much more expeditiously by rail than by lake precludes any hopes of increase in the lake coal traffic. It seems more reasonable to suppose that the inadequacy of the existing coal docks of Chicago is due to the decline of the lake trade, rather than the decline of the lake trade is due to the lack of dock facilities.

The iron ore trade will continue to increase and will go to South Chicago and to the new steel plants in Indiana. It is not wanted in Chicago.

There is a hopeful future for the package freight and passenger lines, if adequate facilities are provided for them. The control of the railroads over the lake package lines must be lessened in some way, however, so as to maintain the healthy influence^{upon rates} of competition between the lake and rail carriers.

The condition of the Chicago River has, no doubt, had some influence in causing the decline of the Chicago lake trade. The decline though, has been mostly because of natural reasons, and the improvement of the Chicago harbor will probably affect, chiefly, the package freight and passenger interests. Conditions at Chicago need improvement very much if only for the convenience and expeditious handling of freight.

Of the three alternatives for developing a harbor for Chicago, the plan for an outer harbor seems to be the most favorable. The obstacles in the way of developing the Chicago River as a harbor are too many and too difficult to remedy. The Calumet Harbor plan seems to be inadvisable because of the fact that the railroads bring their cargoes into Chicago, and while boats would go to South Chicago to unload, they would have to go to Chicago for a return cargo.

The development of an outer harbor for Chicago requires the building of adequate terminal facilities in the way of docks and ware-houses upon the lake front, the establishment of a lighterage service upon the river, and provision for railway connections with the harbor. Although the necessity of these improvements is well recognized, there has been practically nothing done to accomplish them. The question as to who will undertake the building of the harbor - the municipal authorities, the Sanitary District, or a

private corporation - must be decided upon before the construction of the harbor is begun. The city does not have the funds to build the harbor, so that at present the choice lies between the Sanitary District and a private corporation. There is at present a sentiment favoring the ultimate ownership of the harbor by the city. As the matter now stands nothing has been done to aid Chicago's shipping, and probably nothing will be done for some time to come.

--O--

BIBLIOGRAPHY.

Primary Sources.

Government and official reports.

Andrews, I. D. Trade and Commerce of the British North American Colonies and the Trade of the Great Lakes and Rivers. Sen. Ex. Doc. 32nd. Cong. 1st. Sess. No. 112. Washington, 1853.

Census Reports.

Eighth Census, (1860) Agriculture.

Eleventh Census, (1890) Transportation by Water.

Transportation by Water, 1906. Department of Commerce and Labor, Bureau of the Census. Washington, 1908.

Report to the Treasury Department on the Internal Commerce of the United States for the Year 1891, 1887, 1872.

Annual Report of the Chief of Engineers, Washington, 1875-1909.

Monthly Summary of Commerce and Finance of the United States. Bureau of Statistics, Department of Commerce and Labor. Washington.

Report of the Commissioner of Corporations on Transportation by Water. Parts I and II. Washington, 1909.

Report of the Industrial Commission. Nineteen volumes. Washington, 1902.

Report of the Select Committee on Transportation Routes to the Seaboard. Washington, 1874.

Tunell, G. G. Transportation of the Great Lakes of North America. (Statistics of Lake Commerce.) Washington, 1898.

Chicago Board of Trade Reports. Chicago, 1858-1908.

Report to the Mayor and Aldermen of the City of Chicago by the Chicago Harbor Commission. Chicago, 1909.

Transactions Illinois State Agriculture Society.

Sikes, Geo. C. Report on the Chicago Dock Problem. Chicago, 1909.

River and Harbor Legislation. 1790-1887. Sen. Mis. Doc. 49th. Cong. 2nd. Sess. No. 91.

Other Material.

Barton, Jas. L. Letter to Hon. Robt. M'Clelland in Relation to the Value and Importance of the Commerce of the Great Western Lakes. Buffalo, 1846.

The National Convention of the American Cheap Transportation Association. Troy, N. Y., 1874.

Norris, J. W. Business Directory and Statistics of the City of Chicago for 1846. Chicago, 1883.

Peck, J. M. Gazetteer of Illinois. Philadelphia, 1837.

Report of the Committee on Statistics for the City of Chicago Submitted to the National Convention at Chicago, 1863. Chicago, 1863.

Secondary Authorities.

Andreas, A. T. History of Chicago from the Earliest Period to the Present Time. 3 vols. Chicago, 1884.

Blanchard, Rufus. Discovery and Conquests of the Northwest with the History of Chicago. Wheaton, Ill., 1881.

Bross, W. M. History of Chicago. Chicago, 1876.

Eighty Years Progress of the United States; a Family Record of American Industry, Energy and Enterprise. Hartford, Conn., 1869.

Johnson, E. R. Ocean and Inland Water Transportation. N. Y., 1906.

Putnam, J. W. An Economic History of the Illinois and Michigan Canal. Reprinted from the Journal of Political Economy. Vol. XVII, Nos. 5, 6, 7. 1909.

Sheahan & Upton. Chicago, Its Past, Present, and Future. Chicago, 1871.

Wright, J. S. Chicago, Past, Present, and Future. Chicago, 1868.

Magazines and Periodicals.

Annual Review of the Commerce, Manufactures, Public and Private Improvements of Chicago for the Year 1854. (Daily Democratic Press.) Chicago, 1855.

Bement, A. and Committee. The Chicago Harbor Problem. Journal of the Western Society of Engineers, April, 1910.

Chicago Commerce. Published Weekly by the Chicago Association of Commerce. Chicago.

Ewen, J. M. The Chicago Harbor. Journal of the Western Society of Engineers, Dec. 1909.

Hunt, Freeman. The Merchant's Magazine. N. Y.

Johnson, E. R. Inland Waterways, their Relation to Transportation. Annals of American Academy. Vol. IV.

Noble, Alfred. The Development of the Commerce of the Great Lakes. Vol. L. In Transactions of the American Society of Civil Engineers.

The Railroads, History and Commerce of Chicago. Three articles published in the Daily Democratic Press, Chicago, Ill., 1854.

Rex, F. Chicago Port Administration and Harbor Facilities. Annals of American Academy. March, 1907.

Thayer, Walter. Transportation on the Great Lakes. Annals of the American Academy. Jan., 1908.

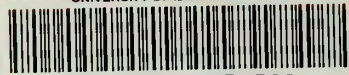
Wilcox, R. B. Chicago Harbor. Transactions of the Civil Engineers of Cornell University. 1901.

Parton, Jas. Chicago. Atlantic Monthly. Vol. XIX.





UNIVERSITY OF ILLINOIS-URBANA



3 0112 086857569